TEAL DATA LIMITED
NOW ONLY £155
FOR ACOUSTIC COUPLERS
025-14-28487

ComputerWeekly
Thursday, February 16, 1984

PT7 cuts costs
Ferranti Computer Systems Limited, Simonsway, Wythenshawe, Manchester M22 5LA, Telephone 061-499 3355, Telex 668084
FERRANTI
Computer Systems

The year 1931 saw the last of the series of seaplane races, which was won by an RAF team.

DEC brings race back to the waters

by John Kavanagh

A 71-YEAR-OLD seaplane race is being revived this summer by US minicomputer leader Digital Equipment as part of the British Air Racing Championship.

The Digital Schneider Trophy Race will commemorate a series of seaplane races held annually from 1913 to 1931, when an RAF team won the trophy for the third time in a row and the series ended.

Prize money of almost £15,000 is being put up for the race, which will take place over a 48-mile course over the Solent.

Around 35 competitors are expected, including RAF and Royal Navy teams.

The original trophy was put up by the French industrial company Schneider to encourage the development of seaplanes. The first race, like the last, was won by the UK – and followed the Solent course.

Interest in seaplanes has waned because of advances in flying boats and conventional aircraft, and for some years there was only one competitor. Indeed, the UK team won the trophy the third time running and for keeps in 1931 simply by flying over the course with no competition. The Supermarine plane, predecessor of the Spitfire, later in the same day set the World Absolute Air Speed Record, then 519mph.

A seaplane is defined as an aircraft with floats; a flying boat floats on its hull.

"There's practically no-one making seaplanes these days," says Maurice Imray, aviation secretary of the Royal Aero Club, which is organising the race. "Some companies make floats, so seaplanes tend to be converted land-based aircraft."

The race is on June 23 and pilots will practise the day before.

Public sector bodies join forces

by George Black

SIX major public sector bodies are to form a joint policy on the use of real time software

The six, including the British Steel Corporation, the Central Electricity Generating Board (CEGB), and the Defence Ministry, are to form a public purchasers group. The formation of the group was announced this week by junior industry minister, John Butcher, who also launched the publication of a suppliers' guide to the best tools currently available.

Butcher said: "Companies will need to invest in better tools and methods for the future if development costs are to be reduced. We cannot afford to be complacent about the strong position that UK software currently enjoys."

The software tools for application to large real time systems (STARTS) guide is the fruit of a two-year collaboration between the Department of Trade and Industry, the National Economic Development Office (NEDO) and the National Computing Centre (NCC).

The British Steel Corporation, Central Electricity Generating Board, South of Scotland Electricity Board, Civil Aviation Authority and Defence Ministry (MoD) are to adopt the guide as the basis for a UK standard.

They hope to be backed by several private corporations in their bid to harmonise requirements. The buyers were not involved in writing the guide. They saw it for the first time this week, but there are unlikely to be any shocks in its list of 24 "front runners".

They include many established tools such as Mascot and SDS; some new ones like SDL's Perspective are excluded on grounds of immaturity.

Critics may latch on to the fact that the 42 consultants who put together the guide included many experts who had a vested interest in the products or even helped develop them. Officials argue that this was unavoidable and that the influences cancelled each other out. The list is not fixed, they point out, and will be up-dated.

A limiting factor was availability: some US tools were ruled out as local support was not offered.

The idea for the guide sprang from a NEDO initiative which was discussed at a conference at the MoD's Royal Signals and Radar Establishment (RSRE) division in Malvern in March 1981. Pactel's Cameron Low was appointed head of a committee to study how the fragmentation of effort in developing software tools could be reduced.

W. H. Smith moves into business software

by John Riley

W. H. SMITH is moving into mainstream business software distribution. From the beginning of next month, it will supply software to dealers of selected microcomputers, following a link-up with major US business software distributor Softeam.

Under the W. H. Smith-Softeam scheme, dealers will get business software anywhere in the country within 24 hours, claims W. H. Smith. The software on offer will come from the US Softeam's catalogue of 1,500 products.

Smith's present micro business centres around home computers and games software which it sells from its High Street stores. But it has been moving into low-end business micros like the Apple IIe, Commodore 64 and BBC model B, and has separate computer shops in 30 of its largest stores.

It is also toying with teledistribution of games software via the Romox re-programmable cartridge system.

"Softeam is the biggest business software distributor in the US," says Paul Turner, general manager of W. H. Smith Softeam. "We look at the software and check it out on each machine, and we give technical support to the dealers. We are targeting certain machines."

Among the machines targeted are two that will not be available in the UK until the middle of March, Fujitsu's eight-bit Micro 8 and its 16-bit FM-16β. These two machines are to spearhead Japanese mainframe manufacturer Fujitsu's push into the UK micro market.

Fujitsu is placing heavy emphasis on availability of business software for the two micros. "Other Japanese companies made the mistake of launching their micros too quickly, with the wrong operating systems and not enough software," says Roger Handley, UK sales manager of Fujitsu Microelektronik's micros.

"We're doing it the other way round, with two operating systems and stacks of software."

According to Handley, W. H. Smith Softeam will have 200 or more packages in Fujitsu format for the middle of March. He has no fears of falling a victim to the microcomputer shakeout and hopes to take 3% of the UK's business sector market for 16-bit micros this year.

Handley adds that Fujitsu has made £25 million available for the first two years.

NEDO hits out at civil servants

by John Riley
and John Kavanagh

GOVERNMENT purchasing policy is failing because civil servants put too much emphasis on cost when buying office equipment. As a result, companies of all sizes are missing out.

So says the National Economic Development Office (NEDO), which is discussing the three-year-old Public Procurement Iniative with the Department of Trade and Industry.

"Procurement must be looked at in the long-term, including maintenance and support," says Steven Hoier, chairman of NEDO's office equipment working party.

"In the long-term, the best suppliers are British because they're here with us. That is not simply to say, 'Buy British'. That would be a short-term attitude. But officials should look to British suppliers which have been examining the market, are close to it and can anticipate it."

Hoier adds that a wide range of firms could benefit if the initiative worked, including small companies trying to grow, multinationals with UK factories, and electro-mechanical equipment suppliers trying to break into electronics.

"The initiative is failing because civil servants traditionally take the lowest bid," he says. "You can't blame them. But we need a monitoring system so buyers can report to us when they take the public procurement initiative."

Meanwhile, on the services side, government procurement policy seems to be going the industry's way. The Computing Services Association (CSA) has claimed "major breakthroughs" on government contracts – and heightened union fears that the running of government installations could be put out to commercial firms.

The CSA put 20 recommendations to the central purchasing agency, the CCTA, in 1982, and has now won better procurement terms.

"The results have been far better than expected," says Peter Partington, head of the CSA's government procurement working party.

"Major breakthroughs have been made on major issues such as part-payment for design studies, defining problems, and debriefing sessions. We will continue pushing on several major issues."

But civil service unions argue that they can provide most of the services needed by government departments. They speak of a "real fear" that the government aims to introduce full facility management contracts as part of its bid to trim the civil service.

The CCTA describes such talk as "pure speculation".

McCormack replaces injunction-hit Fast kit

by George Black

McCORMACK and Dodge has obtained a replacement for the Fast report-writer which a US injunction prevented it from selling. If a Washington court agrees, it will supply Software International's "The System" as an interim solution until it can develop a new system of its own.

McCormack's UK distributor, RTZ Computing Services, which is also being sued by the author of the report-writer, ABC Management Systems, said this week that it was fully protected from legal action by its agreement with McCormack.

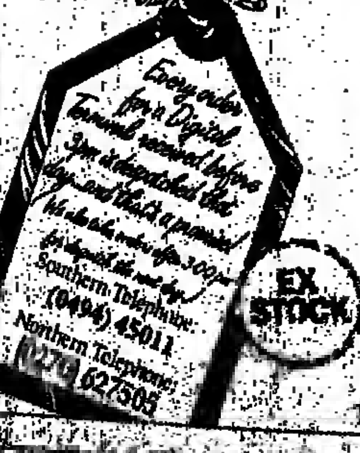
McCormack says it will have its own report-writer on the market by the third quarter of the year for IBM users, and soon after that for ICL users. But users of other hardware may have to wait longer – which is why McCormack is keen to conclude the deal with Software International.

The deal needs the approval of the superior court judge in Washington because McCormack was ordered to pay over $500,000 to Software International as licensee of Fast. ABC is to receive $2.3 million in damages from McCormack.

If the judge agrees, the deal between McCormack and Software International will settle all legal claims between the two.

Company chairman Jim McCormack said it had become clear after long negotiations with ABC that it had no interest in a settlement.

ABC president Vernon Ruskin says McCormack has no right to sell Fast outside the US.



Every day at 3 o'clock, we clear the Decs.
Every order for a Digital Terminal received before 3pm is despatched that day – and that's a promise! We also take orders after 3.00pm for dispatch the next day.
Southern Telephone: (0494) 45011
Northern Telephone: (0270) 627505
EX STOCK
VT100, VT101, VT102, VT131, LA50, LA100, LA12, LA120.
Trust Rapid Terminals to supply ex-stock, the complete range of Digital terminals – all with 90 day on-site warranty and the support you'd expect from the experts.
VT and LA are trade marks of Digital Equipment Co.
Rapid Terminals
Authorised Digital Distributor for Terminals Products
Tops in Terminals Distribution

UNIVERSITY OF J
LIBRARY

ComputerWeekly
Thursday, February 23, 1984 Number 899 35p

REYNOLDS . . . *Hints at acquisitions.*

Micro Focus is richer

by Dave Maddon

MICRO Focus, the UK software group and star of the Unlisted Securities Market, has announced spectacular results for the 53 weeks to December 7, 1983.

Pre-tax profits nearly tripled to £2.35 million on turnover which more than doubled to £9.1 million. Not surprisingly, Micro Focus chairman Brian Reynolds is delighted with the performance. He says that the company had made a strong start to its current fiscal with orders running at twice last year's levels.

In 1983 57% of the company's revenues were earned overseas, a rise of 10%. But the company lost ground in Europe – sales fell from £602,000 to £155,000 in the period.

Micro Focus is going back to its shareholders for more cash. It hopes to raise £9 million from a right issue.

Reynolds suggests that Micro Focus will look for corporate acquisitions in 1984. "We are not actively looking", he says, "but we need to be in a position to take advantage of circumstances should they arise."

Personal Cobol, says Reynolds, will form the basis of a range of workstation oriented products.

Ada group is back with plans for ICL

by George Black

THE British project to develop Ada language products was revived last week – three months after the £9 million government backed scheme collapsed.

But the new project will have more limited aims and less cash – and a major UK software house has backed out of the plan.

ICL, Software Sciences and Systems Programmers (SPL) are to go it alone in a £3 million project to develop an Ada compiler for ICL machines by March next year, with £1 million of the cash coming from the Department of Trade and Industry.

Systems Designers (SDL), although still a shareholder of the Ada Group consortium, has pulled out of this part of the plan after a row. It has bought an Ada compiler used by the West German Defence Department on Siemens hardware, and aims to convert it for DEC Vax equipment by this summer.

The original project, Chapse (Chill and Ada Programming Support Environment) was a plan to develop compilers and tools for the US Defence Department's Ada language and British Telecom's Chill language.

The 4½-year scheme collapsed when British Telecom dropped out after insisting an fixed cost contracts for work by the Ada Group. Ada is expected to be the *de facto* standard real time language for the next decade.

SDL managing director, Philip Swinstead, was shocked by the announcement by the other three group members. He says it was premature because talks were still going on between them about the best way forward.

"We want a national APSE (Ada Programming Support Environment) project and believe it can still happen," says Swinstead. "We want to go further than just an ICL compiler. We've been offered a much larger government grant than they have got if we can only agree a plan – but we cannot pick it up because we have not agreed yet."

A statement by the consortium's general manager, Martin Jordan, announces a plan to deliver a portable implementation of Ada for validation by the US Defence Department next March. It says the financial and technical resources would come from ICL, SPL and Software Sciences, along with the DoTI grant.

British Telecom is no longer involved. Jordan says he is confident they will also get financial assistance from the Defence Ministry, though this was still not contractually secure.

The three companies intend to have 25 design staff on the work, and to replace the half-dozen SDL people involved.

Jordan says: "My advice to SDL now is to do its own thing and pull out of the consortium altogether."

SWINSTEAD . . . *Shocked.*

IBM and BT set for cashless contract

by Dave Madden

IBM and British Telecom are set to win a major contract to supply networking and computer equipment for Britain's proposed cashless payment system.

A spokesman for the Committee of London Clearing Banks (CLCB) which is developing the system, says the deal will be signed this month. But IBM says that although its discussions with the CLCB are at an "advanced stage" it has yet to make a bid.

The system, known as electronic funds transfer at the point of sale (EFT/PoS) will provide an online payment system as a national utility. It will allow retailers to replace money and cheque transactions with plastic card payment.

Brian McCarthy, a director of the PoS project team says the system will use British Telecom's packet switching system (PSS).

But he explains: "There is a problem of getting messages from the retail outlets to the PSS. It would be far too expensive for individual retail outlets to provide their own direct access."

British Telecom has offered a solution which envisages a network of minicomputers providing a gateway to the PSS.

McCarthy says that initially those machines will come from IBM. But the CLCB has insisted that the hardware must be dual-sourced.

The committee intends to appoint a consultant to police the development. Logica and CAP were shortlisted, but Logica says that the terms of reference are "too vague", and it is not pursuing the matter.

IBM millions will link research centres

by John Riley

IBM IS to provide millions of pounds worth of computers, telecommunications equipment, software and personnel to link computers at 250 different European research institutions and universities by the end of this year.

The aim is to link existing academic computer networks into a common network called the European Academic and Research Network (Earn). This will permit researchers in Europe to link with each other and also to link with US research establishments.

"This will be a multi-million pound project over a number of years," says an IBM spokesman, who is unable to define the precise arrangement by which the company is "providing" equipment. "It will be different in different countries and will depend on the installations."

The spokesman states that under the programme IBM will also provide maintenance support "depending on what equipment is installed".

A leading researcher at the European Centre for Nuclear Research in Geneva (Cern) says the gateway to the various networks uses the RSCS protocol (remote spooling communications subsystem) which runs under IBM's operating system VM.

However, Earn is not designed to lock users into IBM standards and has nothing to do with IBM's own communications protocol SNA. It is based on Bitnet, a network developed by IBM for US research institutions which allows interconnection to a wide number of other manufacturers' networks and machines. Bitnet is based on IBM's own internal computer network VNET.

Some European researchers see IBM's move to set up Earn as a massive exercise to improve the company's image in Europe.

Another view is that IBM may be promoting better links between research establishments so that it can more effectively measure the progress of its own research.

The main drawback to the programme is seen as being the cost of the telecommunications lines, which are much more expensive than those in the US.

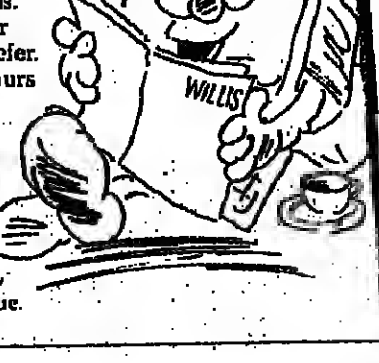
Parkinson re-emerges at Rair..........7

Company profile looks at 100 years of NCR...18-23

Two robot firms hit trouble..........6

Micro News..........9
Company News..........10-11
Software File..........12-13
Profile/Platform..........14
Downtime/Puzzler..........14
Letters/Leaders..........15
People/Diary/Courses..........16
Focus on Systime..........17
Company Profile: NCR..........18-23
Standards..........24-25
Products..........27, 30
Marketplace..........28-30
Crossword Solution..........74
Sales Bit..........75

Job Vacancies..........31-75
Jobs in Yorkshire and the North East..........68



Where do computers do their shopping?

From flexible disks to print wheels, ribbons to cables, they all come straight out of the Willis catalogue. Everything you need to run your computer, from one convenient source, at very competitive prices.

It's so easy with Willis. Just phone through your order or post it if you prefer. We deliver within 48 hours or earlier if it's urgent.

Do your computer shopping the easy way. Send for the new Willis catalogue now.

Please send me the new Willis product catalogue.
Name
Company
Address
Tel no
Post to: Willis Computer Supplies Ltd., Freepost, Southmill Road, Bishop's Stortford, Herts.
Tel: (0279) 506491

WILLIS
Where computers do their shopping.

[illegible]

STC profit soars to £92 million

CORFIELD . . . *"We try not to give IBM a slap in the face."*

by Dave Madden

STANDARD Telephone and Cables has reported strong growth in 1983. Its financial results for the year to December show pre-tax profits up 43% at £92.2 million on turnover ahead 46% at £920.6 million.

The company's domestic sales were up 33% at £647.4 million, and that includes some £305 million from British Telecom. Exports improved from £143 million to £257 million.

During the year STC spent over £100 million on acquisitions, including the recently rationalised electronics companies bought from ITT, and International Aeradio from British Airways.

And it has had an immediate return: the acquisitions contributed £10.2 million profits on sales of £114 million.

Research and development cost STC £53 million in the year, and the company says it is committed to "further substantial investment in new products, technology and equipment to enhance the group's competitive position and growth prospects".

The company intends to continue to improve its productivity and expects a gradual reduction in its number of employees.

Despite the strong improvement, the pre-tax figure was on the low side of a wide range of City forecasts.

Last week Sir Kenneth Corfield, chairman of STC, spoke of the company's plans to take advantage of the increasing convergence of telecommunications and data processing. STC, he said, would continue to become more involved in the processing and packaging of data before transmission.

But while Corfield believes STC has more computer experience than IBM has telecomms experience, "we try not to give IBM a slap in the face, because we know what kind of slap it will give back".

While taking advantage of the convergence, STC is not trying to get into a new market, data processing, but to defend its networking business, Corfield says. "We are happy with the very large, very solid business we have."

Corfield predicts STC turnover will top £2 billion by the end of the decade.

STC fortunes will continue to be closely associated with British Telecom, with BT taking one-third of STC total produce. Corfield estimates that even in a more open UK telecommunications market, BT will retain at least an 80% share.

Nor does he see a case for breaking up BT. It is a monopoly by definition, whether in the public or private sector, and he points out that it is smaller than the smallest of the new US telephone companies formed after the break-up of AT&T.

IBM turns heat on the portables

by Philip Hunter

IBM last week stepped up its pressure on the micro market with the surprise launch of its own Portable Personal Computer. The move came six months sooner than generally expected and puts the heat on compatible portables from firms like Compaq and Eagle.

The machine from IBM is technically the same as the desk-top PC, but is $300 cheaper, at $2,795, and in a 30-pound "portable" package.

It makes most portable PC-compatibles from rival companies little cheaper than the true blue IBM portable, and these will have to drop in price if they are to compete.

But the main target of IBM's announcement is Apple, which last month came out with Macintosh, a cheaper version of Lisa.

Macintosh at $2,495 in the US is cheaper than the IBM portable, and is generally considered to be the technically superior machine. It looks better as a portable machine, weighing in at around 20 pounds. But much will depend on which company can deliver in volume first.

IBM says limited shipments will begin in March in the US and Canada, and Apple is already moving its first Macintosh machines to US dealers.

Macintosh will certainly be first to arrive in the UK, with deliveries expected to start next month. IBM has yet to set a date for shipments outside the US and Canada.

The IBM Portable Personal Computer measures 20 by 17 by 8 inches. There is a 9in built-in amber monochrome display with room for 25 lines, and a full-size IBM-PC keyboard. Technically it is virtually the same as the full-size desk-top PC, with the Intel 8088 processor, and 256 Kbytes main memory, expandable to 512K.

The portable runs all PC programs, except those written only for the PC Junior.

It offers a universal power supply so that it can be used in countries with different mains voltages, and a 360 Kbyte double-sided half-height disc drive.

IBM has also announced a cluster adapter that allows multi-user systems to be built from its PCs. The adapter and associated software enable up to 64 PCs to be hooked up to share common data files.

US treats Apple fakes as crime

CRIMINAL charges have been brought against six people of Philadelphia for smuggling fake computers and software into the US from Taiwan. This is the first time criminal charges have been made against alleged Apple fakers in the company's running battle with pirates. Previously the charge has been copyright infringement.

So far copyright prosecutions have been brought in 30 countries and Apple is currently appealing against a recent Australian decision that software is not covered by copyright law.

An Apple spokesman said: "This is a major setback not just for Apple, but for all other manufacturers. If that decision stands there will be problems in Australia as a market and the Australian legislature will have to change the law."

Digico sale

THE sale of UK minicomputer manufacturer Digico is expected to be completed this week – and young UK micro minicomputer firm Optim is a leading bidder. Last week Optim said it had bought Digico but receiver Marwick Mitchell says other companies are still in the running.

NEB millions

NATIONAL Enterprise Board companies had a joint turnover of £91 million in the first half of 1983, compared with £66 million the year before – but they made a net loss of £1.8 million. The 1982 loss was £7.1 million. Electronics firm Inmos trebled sales to £11.4 million and cut losses by 20% to £8.9 million. NEB's operating profit – dividends and interest against administration costs, was £2.5 million, up from £1.8 million.

Law suit goes on

IN THE story published in last week's *Computer Weekly* it was stated that the law suit between Filetab Support Services and the National Computing Centre was over. This is not the case. The suit between Ace Microsystems and Filetab has been settled, but Filetab is still suing the NCC for non-payment of royalties.

Nixdorf's public

WEST German Nixdorf Computer announced plans to go public this week. Only 20% of the shares will be sold initially but 50% will be registered for trading. All voting stock will remain with the Nixdorf family. Founder Heinz Nixdorf says he aims to double annual sales to over DM5 billion in the next four years.

Compass portable

US MICRO manufacturer Grid Systems launched the Compass upmarket portable micro, into the UK this week. It has 256K main memory and 384K of bubble, and is built around Intel's 8086 processor family. Prices start at £5,[illegible]

Workstation maker triples turnover

GROVES . . . *"Most productive staff anywhere."*

by Dave Madden

CONVERGENT Technologies, the Californian manufacturer of intelligent workstations, tripled its turnover in 1983, and the company has reported sales of $163.5 million. It turned over just $350,000 in 1980.

Bob Groves, Convergent vice-president, international sales, says the figure makes the company's 24 salesmen and 900 employees the most productive staff in any industry, anywhere.

And 1984 is unlikely to see that growth slow. The company does not contradict forecasts of $400 million sales this year, while its OEM deals so far, which include AT&T, Plessey, Burroughs, NCR and Prime, add up close to $2 billion over the next three years.

About 90% of those sales will come from the company's new product line, N-Gen, Megaframe, and Workslate, though Groves points out that Convergent is still producing 350 of its original AWS workstations per day.

Groves says Convergent is set to raise the price of its 2½-pound briefcase computer, Workslate, from $895 to $1,100. Workslate was Convergent's first product to be sold retail to the end-user, and it proved the best-seller in American Express' Christmas catalogue. But the company will offer the product to OEMs in the UK.

Groves reports particular interest from telecommunications companies in the UK, which are expected to fit a telephone into the basic unit.

Groves is showing Convergent's latest box, Miniframe, to UK prospects. Miniframe is a single CPU-version of the Megaframe. It uses Motorola's virtual memory 68010 processor.

Protection Bill held up by MPs

by our Parliamentary Correspondent

ARGUMENTS that the Data Protection Bill should cover manual as well as computer-based information have met with deaf ears.

The Commons' standing committee chairman ruled that as the Bill is concerned exclusively with automatic processing, amendments seeking to extend the Bill to cover manual systems were out of order.

But Home Office Minister David Waddington moved an amendment to include in the Bill data that does not directly identify a person, but which does contain information which could enable the user to make an identification with the help of other circumstantial information.

A second government amendment made it clear that when additional information could complete the identification of a subject, it would be an offence not to make this clear when applying for exemption of the data from the Bill's ambit.

In the Lords, an attempt to give a Commons Select Committee power to examine the government's nominee for the post of director-general of telecommunications, was made by Labour peer Lord Stoddart, but failed.

The government was beaten in the Lords on an amendment to the Telecommunications Bill, which was moved by Labour peers to prevent discrimination against rural areas in the cost of British Telecom services.

Minister of State at the Scottish Office, Lord Gray, announced in the Lords that the government hoped eventually to increase the number of technology training centres to 175.

PHILIPS

Be a step ahead with The Philips Portable Computer P2000 C

The affordable portable. With free software.

Distributors to Great Britain:

Micro Design
Oakfield House
35 Crewe Road, Sandbach
Cheshire CW11 0NH
Tel: (09367) 61 23. Telex: 36 690

Kingsway Data Systems
30 Guildford Street
Chertsey, Surrey
Tel: (09328) 66 811. Telex: 24 667

Midlectron Distribution
Midlectron House, Nottingham Road
Belper, Derby DE5 1JQ
Tel: (077 382) 6811. Telex: 377879
NEC World Trade Centre
St. Katherine's Dock
London E1 9AA
Tel: (01) 4819 919. Telex: 88467

Dealer enquiries welcome.

Computer Weekly, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS. Telex: 892084 BISPRS G

EDITORIAL

Inquiries:	01-661 8642/8641
Circulation and subscription inquiries:	0444 459188
Editor David Craver	01-661 3122
Deputy Editor Ron Coates	01-661 3124
News and Micro Editor Robert Parry	01-661 3044
Features Editor Andrew Thomas	01-661 3422
Financial Editor Dave Madden	01-661 3041
Software Editor George Black	01-661 3423
Reporters Keith Holder Philip Hunter Donald Kennett Nuala Moran John Riley	 01-661 3437 01-661 3081 01-661 3048 01-661 3042 01-661 3050
Chief Sub-Editor Chris Thornton	01-661 3447
Deputy Chief Sub-Editor Mike Marples	01-661 3063
Sub-editors Jacqueline Moore Nigel Whitnall	 01-661 3044 01-661 3043

DISPLAY ADVERTISING

Advertisement Manager Harry Hutson	01-661 3102
Deputy Advertisement Manager Chris Prier	01-661 3535
Sales Executives Philip Bonafont David Hartley-Marjoram Jennifer Simpson Xenia White	 01-661 3070 01-661 3036 01-661 3022 01-661 3071
Manchester Harry Aikin	061-872 8861
Birmingham Ken Parrott	021-356 4836

ADVERTISING PRODUCTION

Display Roger Albury	01-661 3672
Classified Steve Lever Martin Lawrence	 01-661 3104 01-661 3675

Birmingham: Lynton House, 202 Walsall Road, Birmingham B42 1BA. 021-356 4836
Manchester: Grove House, Skerton Road, Manchester M16 0WL. 061-872 8861
New York: 205 East 42nd Street, New York, NY 10017. (0101-212) 867 2080

CLASSIFIED ADVERTISING

Group Advertisement Manager Brian Durrant Field Sales Manager Michael White	01-661 3130
CONSULTANCIES SALES Manager Julie Hannaford-McInally	01-661 3462
Sales Executives Karen Bowers Chris Markiewicz Helen Zubel	 01-661 3787 01-661 3787 01-661 3787
DIRECT CLIENT SALES Telesales Manager Neil Thackray	01-661 3187
Sales Executives Julia Bricker Gillian Clifford-Smith Yasmeen Di Palma Beverley Hagley Paul Kitchen Richard Milbourn Annie Stamp Victoria Whittaker	 01-661 3080 01-661 3080 01-661 3080 01-661 3080 01-661 3080 01-661 3080 01-661 3080 01-661 3080
Birmingham: Vic Sharratt	021-356 4836

CIRCULATION

Terms of circulation control
Computer Weekly is sent free of charge to the following categories in the UK only. Company directors, company secretaries, management services executives, civil servants responsible for computing, management/computer consultants, DP managers/supervisors, systems analysts/O&M officers, programmers, operators and computer field engineers, sales and marketing personnel in the computer industry.

Subscriptions
UK £30, Students £15; US, Canada £50 ($135), Students £25 ($65); Middle East, North Africa (airmail) £67.42; North & South America (airmail) £78.[illegible] ($196.30); Southern Africa, South Asia (airmail) [illegible]; Far East, Australia & New Zealand (airmail) £84.56, Europe (airmail) £53.64.

Circulation Dept
Business Press International (BADS) Ltd, Oakfield House, Perrymount Road, Haywards Heath, Sussex. Tel: 0444 459188.

Publishing Director: Simon Timm
Editorial Director: Chris Howell

Published weekly on Thursday. Registered at the Post Office as a newspaper. ISSN 0010-4787.

© Business Press International Ltd. 1984.

Systime's switch costs 150 jobs

BURY . . . . *"Still the best-selling personal computer."*

by John Kavanagh

UK SYSTEMS builder Systime is pulling back from full manufacturing to concentrate on putting together systems from other companies' equipment. This shift in emphasis is one of the main reasons for 150 redundancies – more than 10% of the total staff – announced this week.

Meanwhile Systime's international re-organisation has continued with the appointment of the biggest shareholder, US computer manufacturer Control Data, as distributor in France and the Netherlands. At the same time Systime is cutting its interest in its software firm in Bombay to let in its Indian agent as joint shareholder.

Systime builds its systems mainly from Digital Equipment processor boards, Control Data disc drives and Kennedy tape units. It has made its own printers, display terminals and other components for many years, but is now cutting this work.

"Our volumes are not enough to enable us to build high quality products at low cost," says marketing director Mike Brierecliffe. "A specialist firm with 20 times our volumes can sell to us at the same price it costs us to build our own.

"We're good at selling and servicing those customers so we'll concentrate on those strengths. We will continue to make our own interfaces and drivers, so our emphasis will change from manufacturing to integrating."

Systime has already put new emphasis on selling more through third parties. It expects nearly one-third of its hardware sales to come through systems houses and dealers this year.

On the international front Systime will probably keep its subsidiaries in France and the Netherlands but also work with Control Data in those countries.

Systime has 14 people in Paris and did business worth £1.5 million there last year, mainly selling processors with systems software rather than turnkey packages.

In the Netherlands Systime has 32 people and a £2.5 million turnover.

A similar distribution agreement has already been announced for South Africa, but there Systime is closing its operation.

About 50 of the redundancies apply to the Leeds headquarters. In all 70 of the 1,000 UK jobs will go. The other 70 or 80 redundancies will be from the 250 overseas.

■ Focus on Systime – page 17

ACT bids for rights to Sirius 1

by Dave Madden

APPLIED Computer Techniques (ACT) made formal proposals last week to acquire manufacturing rights to the Sirius 1 microcomputer from Victor Technologies. It expects a response within the month.

The company made its offer for Victor's assets after a Chapter 11 petition under the US bankruptcy code was filed against Victor.

Although ACT will not reveal details of its bid, it is structured so that ACT would get long-term full rights to manufacture Victor products in the UK.

Lindsay Bury, chairman of ACT, says the final decision will be made by the court, which sets on behalf of creditors like a receiver in the UK, "but we anticipate our offer will be accepted. As far as we know it is the only one".

ACT has also proposed buying exclusive worldwide manufacturing rights to the full range of Victor products. The company says it will be able to fund the arrangements internally.

Bury insists that Sirius is central to ACT's plans. "It is still the best selling personal computer, on a month by month basis, in the UK. We had orders for 1,400 in January."

If ACT succeeds it will consider manufacturing the Sirius at one of Victor's plants in California, although it has already done an assembly run at Glenrothes.

Last week Victor received a $1.6 million loan from Security Pacific Bank, which is already owed $28 million by the company, to meet immediate operating needs. Although Victor's workforce has been cut from 3,000 to 575 employees since last autumn, the cash is still likely to go on payroll.

IBM cuts prices to pave the Sierra way

by Keith Holder

PRICE cuts will be announced this week by IBM for its 3081 and 3083 mainframe computers.

These, according to PCML's Derek Batey, could be up to 20% in the US, though European cuts are certain to be less, as the machines have a higher residual value here, he says.

John Curran, vice president of European marketing for National Advanced Systems (NAS), says that in fact the cuts are only part of a package designed by IBM to keep the 308X series looking attractive to users, while paving the way for its still unlaunched Sierra range.

He went on to say that this type of "price jockeying" with the 308X series was anticipated late last year, though it will have a real impact on the competitiveness of some X plug compatible machines, particularly Amdahl's 508 series.

Enhancements to the processing power of the 3081 are expected to be announced at the same time, says Curran, made possible by improvements to its external data channel controller.

Batey thinks that the effect of the cuts will be to bring IBM's 308X series on to the same price/performance curve as its medium scale 4300 systems, and that Sierra will follow on this trend.

Amdahl is not being idle, however, and plans to start shipping its more powerful dual processor version of the 508 series by May this year.

Bryan Little, the company's UK managing director, confirms that the 5870 is undergoing final benchmarks, and the 5880, which is twice as powerful, will also be ready for shipment late this year.

Entry level prices will be about £2.9 million and £3.3 million respectively.

These are the first dual processors released by Amdahl and, says Little, offer about 75% more throughput capability than existing 580 series uniprocessors.

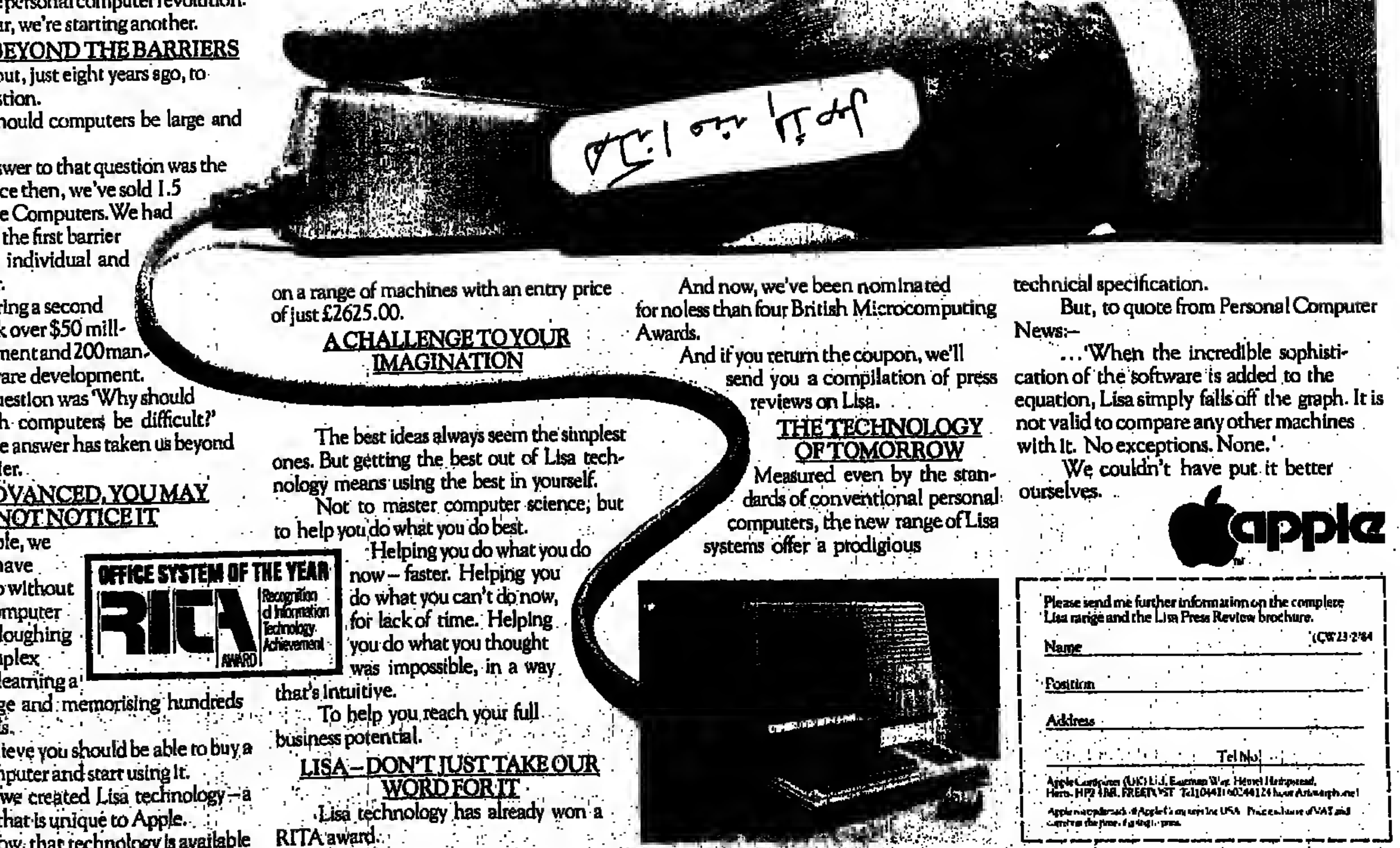
Little says that although Amdahl has an answer to the new IBM machines, which he expects to be launched in October or November the company wants to wait before announcing its rival.

"We would like to get away from this 'Look, we can do that too' syndrome, which has tended to follow every IBM launch", says Little.

Philip Charles, southern sales manager, says the 580 dual processors will bridge the gap in users' requirements for processors with more power than IBM 308X machines, which the Sierra range is designed to do.

In addition, the new 580s will retain full compatibility with the earlier uniprocessor series for both hardware and software. They will also offer compatibility with the company's earlier 470 series. Users of the 5860, the top end of the existing series, will be able to field upgrade their machines to either of the dual processor models.

ONCE AGAIN, APPLE TECHNOLOGY POINTS THE WAY.



When we made our Apple II Computer, we started the personal computer revolution.

This year, we're starting another.

APPLE – BEYOND THE BARRIERS

We set out, just eight years ago, to answer a question.

'Why should computers be large and expensive?'

The answer to that question was the Apple II. Since then, we've sold 1.5 million Apple Computers. We had gone beyond the first barrier between the individual and the computer.

Answering a second question took over $50 million of investment and 200 man-years of software development.

That question was 'Why should working with computers be difficult?'

And the answer has taken us beyond another barrier.

SO ADVANCED, YOU MAY NOT NOTICE IT

At Apple, we believe you have enough to do without mastering computer science, or ploughing through complex manuals, or learning a new language and memorising hundreds of commands.

We believe you should be able to buy a business computer and start using it.

That's why we created Lisa technology – a technology that is unique to Apple.

And now, that technology is available on a range of machines with an entry price of just £2625.00.

A CHALLENGE TO YOUR IMAGINATION

The best ideas always seem the simplest ones. But getting the best out of Lisa technology means using the best in yourself.

Not to master computer science; but to help you do what you do best.

Helping you do what you do now – faster. Helping you do what you can't do now, for lack of time. Helping you do what you thought was impossible, in a way that's intuitive.

To help you reach your full business potential.

LISA – DON'T JUST TAKE OUR WORD FOR IT

Lisa technology has already won a RITA award.

OFFICE SYSTEM OF THE YEAR
RITA
Recognition of Information Technology Achievement
AWARD

And now, we've been nominated for no less than four British Microcomputing Awards.

And if you return the coupon, we'll send you a compilation of press reviews on Lisa.

THE TECHNOLOGY OF TOMORROW

Measured even by the standards of conventional personal computers, the new range of Lisa systems offer a prodigious technical specification.

But, to quote from Personal Computer News:–

. . . 'When the incredible sophistication of the software is added to the equation, Lisa simply falls off the graph. It is not valid to compare any other machines with it. No exceptions. None.'

We couldn't have put it better ourselves.

apple

Please send me further information on the complete Lisa range and the Lisa Press Review brochure. (CW 23/2/84)

Name

Position

Address

Tel No.

Apple Computer (UK) Ltd, Eastman Way, Hemel Hempstead, Herts. HP2 7HQ. FREEPOST. Tel: (0442) 60244

Apple is a trademark of Apple Computer Inc USA. Prices exclusive of VAT and correct at the time of going to press.

Vector aims to raise cash

HAHN . . . *"Vector has an aggressive product development schedule."*

by Dave Madden

VECTOR Graphic, the struggling Californian micro maker, will raise a second round of venture capital finance later this year.

So said Dick Hshn, Vector's senior vice-president marketing and sales, when he came to Europe to assure the company's international distributors that Vector is back in business.

Hahn said that a revitalised Vector had "an aggressive product development schedule" in place for 1984.

The company's priority will be to support multiple operating systems on its machines, and to extend networking and communications capabilities. Vector will offer Unix later this year.

The company has already been forced to support MS-DOS on its Vector 4 series, under pressure of competition with IBM, though it still has a close relationship with Digital Research.

Vector has just survived a disastrous year. The company also lost $700,000 on declining sales in its first quarter of this fiscal year. But in December US Venture capitalist Burr, Ilgan, Deleage & Co put $2 million, and its general partner, Jean Deleage, into the company. Hahn said that the financial reconstruction was working and that the company looked to be profitable again in 1984.

Vector's European operation contributes some 9% of the company's revenues. Nigel Timson, general manager of Vector in Europe, says that there is a major opportunity for the company here.

Its European dealer network was completely reorganised 18 months ago and, claims Timson, Vector is beginning to see the benefit. "We are always looking for good partners," he adds. The company has 22 distributors in Europe – four of those are in the UK.

"There is no better time for a distributor to get involved with Vector than now – it will be able to influence our direction," he says.

Vector has an installed base of 20,000 systems, with 3,000 installed in Europe. The company's distribution network includes 400 dealers in the US.

Inmos says no to AT&T bid

by Dave Madden

SIR Malcolm Wileox and the board of Inmos have rejected a take-over bid made by American Telephone & Telegraph (AT&T), and intend to go ahead with a private placing of the semiconductor company's shares.

It considered the offer of £45 million for most of the 75% of Inmos owned by the British Technology Group (BTG) to be far too low. The company thinks that it is worth at least £100 million, while the US consultants advising the BTG have it at that.

Moreover, Inmos insists that it is now trading profitably on a month by month basis and looks to report its first full year profit in 1984 on turnover of £60 million.

The renewed interest in Inmos from AT&T has complicated, though according to a source close to the company, "not obstructed", its chances of raising between £15 million and £20 million by placing new shares with City institutions.

Stockbrokers Rowe & Pitman and Wood Mackenzie have been preparing the ground for this investment, but potential investors have been relucant to make any decision while the AT&T offer was in the air.

The placing remains Inmos' preferred route -- and it would furnish the company with working capital for the rest of the year -- followed by a possible flotation in 1985, or an industrial link with a larger company on much more favourable terms than it can command at present.

But word from the Department of Trade and Industry is that the public shareholding in Inmos must go, and it seems possible that AT&T will return with an improved offer.

Inmos's opposition to AT&T's suit is not merely commercial. The attraction for the American giant is not Inmos' technology but its manufacturing facility in South Wales which would allow AT&T to avoid the 17.5% tariff the EEC imposes on imported chips.

One of Inmos's financial handlers says that "so far people are trying to walk off with Inmos on the cheap", but that if AT&T, or one of the other casual suitors who have looked Inmos over in recent months were to make a "serious" offer then the DOTI might induce the BTG to accept it.

Sun loses its own president

by John Riley

WEEKS after gaining two people from Digital Equip Corp's UK operations, Microsystems, the Califor Unix engineering works manufacturer, has lost its pr dent. Owen Brown, hims former DEC boss.

According to Sun, Brown, DEC's group operations manag resigned to pursue other interes He is replaced by Scott McNe Sun's vice-president of operatio

Last December DEC's U boss, Darryl Barbé, left to h Sun's new operations in Europ and a fortnight ago Bill Passm DEC's UK marketing manag joined Sun as managing directo the UK.

Passmore will set up Sun's U operations from scratch. "W setting up a technical sup centre before taking on s staff," he says. He adds that S one of "the fastest growing c panies in the US", expects to in quantity to the UK by autumn.

Passmore left DEC to get to the "pioneering spirit" of small venture.

"There's been a lot of sp lation that DEC's in trouble," says, "but it is stable a successful and not in any trouble. I just couldn't find excitement there of taking so thing new and building it up a completely different ma place."

NatWest changes face of mass storage market

by Donald Kennett

NATWEST Bank is preparing to turn the mass storage market upside down with a low-cost, automatic microfiche reader, which can be controlled by a personal computer.

Microfiche has been pronounced dead many times over, primarily because it is not a machine-readable medium and needs "crude" mechanical handling to access it. But as Ray King, group planning manager for NatWest's computer output microfilm (COM) subsidiary, Eurocom, points out, most information is stored to be read by people, and systems that use machine-readable media are difficult to use to store incoming mail.

"COM is more widespread than people realise," he says, "and it has a bigger future than people realise. Nothing touches it for storage and the viewers are far cheaper than magnetic or optical disc-based systems."

A standard-sized fiche can hold the equivalent of one megabyte of data (200 to 700 pages of A4 paper, depending on the reduction factor). The machine that Burocom has got its hands on uses cassettes of 30 fiches costing £2 to £3 per original and 10p per copy.

The problem with automated fiche retrieval systems have been that they used "own brand" fiches only, they didn't handle the fiches reliably and got jammed, or they scratched the surfaces or chewed the edges.

Eurocom's supplier, MAP of West Germany, believes it has beaten these problems, and both companies think they will have a large market to themselves for several months before their rivals catch up.

Eurocom has had a prototype of the £2,250 Hydra fiche reader since November, and it launched the production version last week. The device is due to go into full production in April.

BOYD . . . *"Most Americans think we're a US company."*

Memotech enters BBC Micro arena

by Nuala Moran

ANOTHER contender for a share of the BBC Micro business unveiled its system last week. Memotech's MTX series, based on eight-bit processors, has already sold well in the university/polytechnic end of the education market. The company has high hopes for it in the other sectors of this market and in the serious user home computer market.

Memotech has made overtures towards the BBC. Brian Pritchard, Memotech's marketing consultant, says: "We have had a low-key approach to the BBC. We aren't aiming to replace Acorn – we just want the BBC to commit itself to an even-handed approach to the way it gives coverage."

According to Pritchard, the BBC says it already does this. "But," he adds, "the BBC is now like a manufacturer protecting its rights."

There is hope of some business with the independent television companies, though, and Pritchard says there have been talks with Central and Yorkshire TV.

The bottom of the range MTX500 32K RAM machine costs £275. This can be converted to a full disc system by plugging in an FDX unit, which is a twin five-inch floppy disc system that can store 330K on each disc. This can be further upgraded by the addition of the HDX module providing graphics and Winchester disc storage.

There is also an "Oxford Ring" local area network, which costs £100 a machine to install.

At the moment Memotech is producing around 5,000 units a month, 80% of which are exported. It has a particularly strong market in the US. According to the co-founder of the company, Geoff Boyd, "most Americans think we're a US company".

Memotech has 200 employees at its new factory in Witney near Oxford. There is an Oxford connection, as Boyd and his partner, Robert Branton, were formerly researchers at the university.

The company was founded in April 1982 and built up its strength on selling add-ons for Sinclair ZX81. It was this that helped it get noticed in the US.

Boyd says: "Selling the ZX81 add-ons meant we already had our distribution network organised to sell the MTX series. And ZX81 products helped in other ways. They taught us production expertise and how to export.

"It also meant that we could fund research on the MTX range."

In its first year, March 1982-83, Memotech had a turnover of £2.8 million. It will almost double that to £5 million by this March, and expects to do £15-£20 million next year.

BT and ICL support file transfer protocol

by Donald Kennett

BRITISH Telecom and ICL have put their weight behind a file transfer protocol that could enable microcomputers to talk to mainframes on their own terms.

The protocol was developed three years ago by the US communications specialist, Microcom, for its Micro Courier electronic mail package for Apple IIs. Realising there were equivalents on the market that were all incompatible with each other, the company expanded the program to cater for dissimilar devices and operating systems, and proposed it as a *de facto* standard.

Last year it was endorsed by major companies, including Apple, GTE Telenet and Visicorp. Microcom itself built modems that incorporated the protocol for use with any micro, mini or mainframe with an RS-232 interface.

BT Merlin, BT's business systems division, has joined the licensees. In the words of its technical leaflet, it "is so convinced of the protocol's success that it has agreed to act as the UK agent for Microcom and will be marketing the protocol under its own brand name, T-Link".

BT Merlin will launch the protocol at a one-day seminar in London next Thursday.

The leaflet explains: "There is an urgent need for a low cost, asynchronous protocol that can meet the present and future needs of the personal computer user.

"In order to communicate with mainframes, emulations and protocol conversions are required that are often prohibitively expensive and restrictive in use. The use of a public data network forces the personal computer to work as a dumb terminal, with no provision made for reliable data communications.

"Frequently, in order to transfer files from one personal computer to another, discs are sent in the post.

"T-Link provides the user with a flow-controlled reliable file transfer protocol specifically for the telephone network environment.

"For the first time, it enables all computer makes to share information freely, and brings the personal computer up to its full potential."

UMIST gets contract from European Commission

THE University of Manchester Institute of Science and Technology (UMIST) has won a £120,000 contract from the European Commission to assemble software for its automatic translation programme, Eurotra.

Eurotra is a £16.7 million programme set up over a year ago to produce a working multi-lingual automatic translation system to translate any combination of European languages.

Four British universities – UMIST, Cambridge, Essex and Aston – are involved in the experimental phase of the 5½ year programme which is scheduled to make a completed translation system available to industry by late 1988.

The multi-lingual Eurotra will be a significant advance over Systran, the automatic bi-lingual translation system currently used by the European Commission, the US military and various IT companies.

SALES BRIE

Hotel syste brings in £750,000

MULTICOMPUTER, UK sub sidiary of Molecular Compute of California, has signed a contra with ADP Hotel Services, wor £750,000 over the next yea Multicomputer is supplying SM200 turnkey hotel manageme system, which provides faci for reservations and accounting.

Each system will include abo six terminals and 20 Mbytes di storage, and cost around £7,00 So far, 50 systems have be supplied, and installations are ta ing place at the rate of 10 a month.

Network in Texa

NCR has finished installing one the world's largest online ho networks in Dallas, Texas. Th 1,620-bedroom Loews Anato there is the first user of NCR Modular Lodging System, and h 190 online terminals and 28 pri ters linked to an NCR 9050 proce sor. And in the UK, NCR has wo three orders for its new 1,9 computer systems.

Gas picks Apple

BRITISH Gas has ordered a Apple-based telemetry system monitor and control its Souther Region microwave communic tions network. ATS Telemetry supplying the Scida/Apple systems, with a master station mo nitoring 13 outstations, and control executed from an Appl keyboard.

Cope with load

LONDON Docklands De velopment Corporation h installed a Prime 750 mini to co with increased processing lo from its office systems. LDDC al ready has a Prime 550 and 10 terminals to run Prime's offi automation system, telex and fi ing.

Hoare defends tradition

by Philip Hunter

FIFTH generation computers may not after all need a new generation of programming languages, delegates heard at a London conference last week.

This boost for backers of traditional languages such as Fortran came from Professor Tony Hoare in a lecture at the Royal Society's meeting on Mathematical Logic and Programming languages.

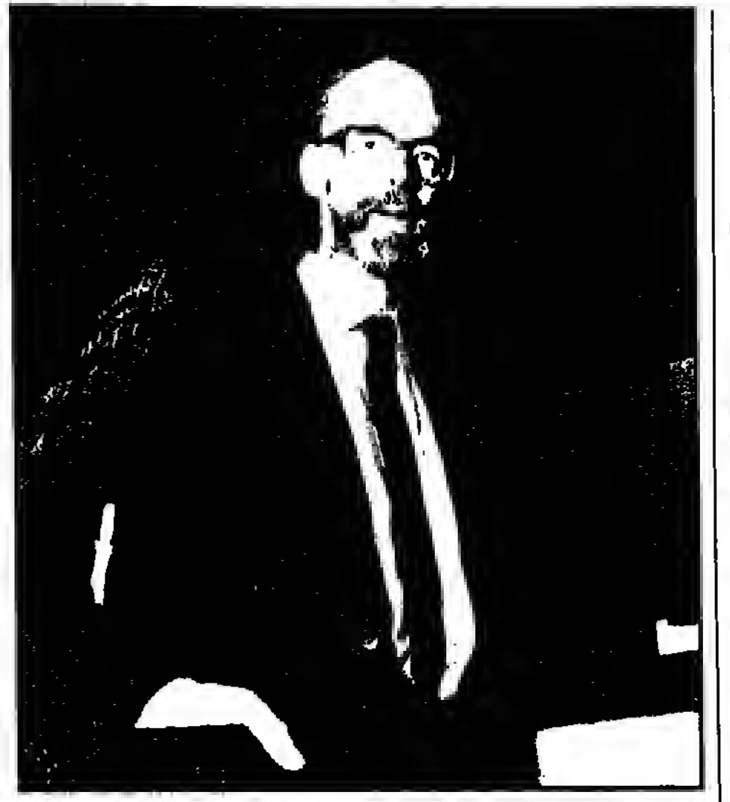
Mathematicians do not often defend the old guard of languages, and normally support the so-called logic languages like Prolog.

But Hoare does not believe that logic languages are necessary for logical programming. Instead he proposes a mathematical specification language for use at the system design stage which exactly defines the program to be written.

Then, the final language used in the coding does not matter so much.

Hoare believes that as it is possible to write well-structured programs in a language that does not encourage good structure – like Fortran – and, likewise, it is possible to write good logic programs in a non-logical language.

Use of a high level mathematical specification language will enable programs to be proved correct before the executable code is written, with a great saving of debugging time, Hoare believes.



HOARE . . . *Does not believe logic languages are necessary.*

Storage investors sue for $30m

by John Kavanagh

INVESTORS in Storage Technology's aborted mainframe project are accusing the company of fraud and racketeering over the way it raised extra funds last year. They are suing the company for over $30 million.

The lawsuit claims the US peripherals manufacturer made untrue and misleading statements when it tried to raise $20 million last summer.

It alleges that the project was running into delays but the company said it had met its goals "substantially on its original time schedule."

Storage Technology also said it had the "capability to compete with IBM", the investors' lawsuit alleges.

Early this month the company's UK managing director, Brian Molly, defended his company's actions.

Although the project was running on time last year it suddenly became apparent that a six- to 12-month delay would be imposed by a test programme. There was no guarantee that the test would have been completed, even in that time," he asserted.

Storage Technology had aimed to build a big IBM-compatible processor.

Molloy said the launch of the IBM 4381 last year had hit the plan because the price was lower than Storage Technology had expected.

Storage Technology raised $50 million in 1981 to back the project. Company documents show the expected costs grew from the original estimate of $45 million to $67 million.

The increase was blamed partly on the cost of enhancing its factory and partly on a technology agreement with a Japanese firm, said to be Toshiba.

The Japanese company had been licensed to produce CMOS circuits for the project because Storage Technology did not expect to be able to meet all its needs on its own.

But the circuit designs had to be amended to fit "a foreign process", Storage Technology declared.

Initially a single investor, Miehsel Abelson, who put up $60,000, is bringing the action against the manufacturer.

He hopes to have it certified as a class action, which means it is brought on behalf of all the 18 mainframe investors.

Storage Technology can respond to the initial suit, then Abelson has to ask the court for certification before putting the full case together.

Storage Technology refused to comment on any aspects of the case.

Clause 22 catches piracy patent

by Claire Goading

THE Ministry of Defence has put an embargo on a device which could stem the software piracy problem. And the small Barnsley company which applied to patent its tape-to-tape copy prevention technique may find that it may lose its rights to the product altogether.

Patents Office has exercised its right to bring inventions to the attention of the appropriate ministry. Under clause 22 of the 1977 Patents Act, information can be restricted concerning any patent applications which are prejudicial to "the defence of the realm" or "the safety of the public".

Until the appropriate authority has looked into the matter, nothing can be said, sold or published about the invention without risking a heavy fine or two years' imprisonment. The law allows a year for this, but cases are generally settled within weeks.

The device's inventor, Jim Lamoot, of JLC Data, fears that he will lose the rights to a product he hoped would make a fortune, as well as depriving the computer industry of a technique it badly needs.

"We've researched quite a few methods during our work as a duplicating house," he says, "but nothing as good as this." The Patents Office has told Lamont that he must not release details about the technique.

"We can't find out why we've been considered of importance to national defence, and so far there's been no mention of compensation," he complains. "We seem to have come up against a faceless bureaucracy."

The Department of Trade and Industry, which is responsible for the Patents Office, declined to comment on any individual case but pointed out that everyone submitting their inventions for patenting must know that clause 22 exists.

"We have to give notice to the appropriate secretary of state," explains a spokesman, "and it is up to the individual interpretation of the staff in that department."

In the meantime, JLC cannot publicise or demonstrate its product, although details have already appeared in the press.

Of 40,000 patents applied for annually, only 5% ever come under the scrutiny of the Ministry of Defence under clause 22.

The MoD may want to keep the device for itself; may simply wish to prevent others from using it or, most likely, may take a look at the product on paper then release it altogether, as it does for six out of seven products embargoed under clause 22.

Barry Fox, the patents expert who first wrote of the "secrecy order" in *New Scientist*, doubts the value of the technique.

"The prevention of direct tape-to-tape copy is what the recording industry has been trying to achieve for 20 years, and that's gone up a blind alley. It's not impossible, but it's impractical," he comments.

Dutch spread Tulips

by Jack Gee

COMPUDATA, the Dutch computer firm, is so confident of British sales that it will set up a subsidiary in the UK later this year, says Ton Van Grieken, export manager.

Van Grieken says a target of 750 units to be sold in the UK has been set for 1984 through a dealership of 30 stores, which is now being established.

"Then in the second half of the year we will set up Compudata UK Ltd," he states. "We are sure about the success of our product because we are 15% cheaper than IBM's personal computer."

Compudata's British operations are being run by Brian R. Greenslade, UK sales and marketing manager.

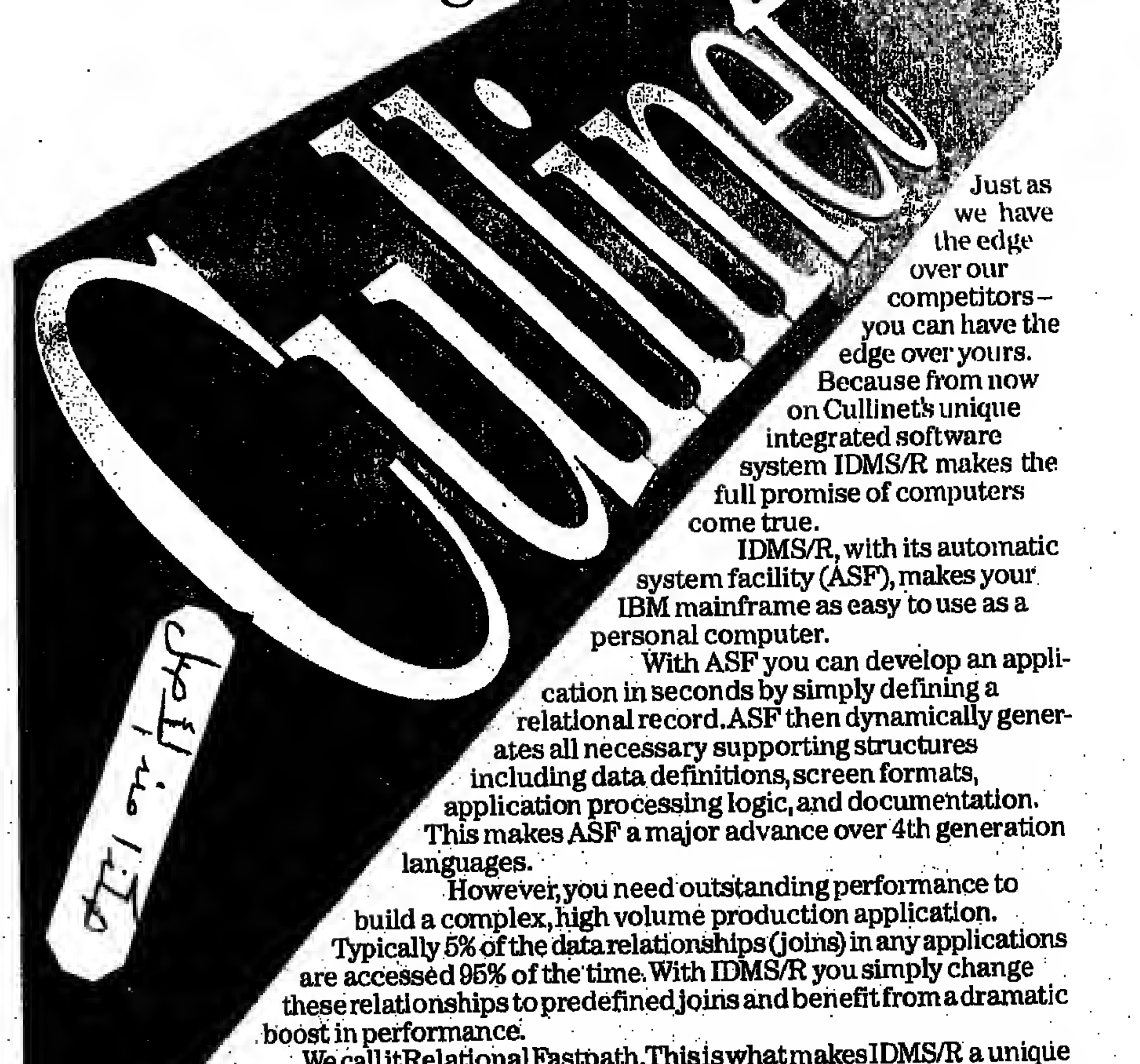
Managing director Robert Romein says: "The British market for microcomputers is tremendous. We arrived on the scene at the same time as IBM. Here in the Netherlands we have the patriotic advantage of being Dutch."

IBM's sales in Holland, according to industry observers, have been a shock to the American multinational. They are estimated at only 800 for 1983.

Compudata, which also manufactures Exidy Sorcerers under licence, launched the Tulip last summer. During the second half of 1983 the company sold 2,800 units. This year's target is 12,000, most of which will go for export as only 1,500 are expected to be sold in the Netherlands itself.

The first Tulip has already been shipped to California and others will soon follow, says Van Grieken.

We have the edge.



Just as we have the edge over our competitors – you can have the edge over yours. Because from now on Cullinet's unique integrated software system IDMS/R makes the full promise of computers come true.

IDMS/R, with its automatic system facility (ASF), makes your IBM mainframe as easy to use as a personal computer.

With ASF you can develop an application in seconds by simply defining a relational record. ASF then dynamically generates all necessary supporting structures including data definitions, screen formats, application processing logic, and documentation. This makes ASF a major advance over 4th generation languages.

However, you need outstanding performance to build a complex, high volume production application. Typically 5% of the data relationships (joins) in any applications are accessed 95% of the time. With IDMS/R you simply change these relationships to predefined joins and benefit from a dramatic boost in performance.

We call it Relational Fastpath. This is what makes IDMS/R a unique relational DBMS, and a perfect system for your production applications. IDMS/R has the most sophisticated back-up and recovery capability of any DBMS, a full integration with personal computers and a complete line of integrated financial and manufacturing applications.

But then Cullinet has always had the edge.

We introduced the 1st dictionary driven DBMS. And we've kept ahead with continuous research and investment producing sophisticated tools based on proven techniques. Call us and we'll prove it.

At Cullinet we believe there's no such thing as second best.

Cullinet

Cullinet Software Ltd, Cullinet House, The Broadway, Stanmore, Middlesex HA7 4DU. Tel: 954 7333. Telex: 8051901 CULLUKG

Robot firms in jeopardy

SCHRAFT (left) and BROCK . . . Days of the small robot firms are numbered.

by John Riley

THE European robot population is growing fast, but the future looks bleak for many robot makers according to a UK expert.

"The days of the small company in the robot business are numbered," says Tom Brock, executive secretary of the British Robot Association in London.

"In the UK now there are 56 to 58 companies selling robots. About four or five of those supply up to 80% of the market."

The situation is similar in Germany and France. Dr Rolf Schraft, deputy director of the Institute for Production Automation at Stuttgart, says: "Although 80 different companies offer 200 different models, 50% of all sales are by three companies and 80% of sales by 12 companies. Therefore a lot of companies aren't earning very much."

Michel Parent, chairman of the French Robot Association, finds that of the 100 robot distributors and manufacturers in France, only about five had over 50% of the market. "Many robot companies haven't even sold one robot yet."

Despite the gloomy news for some manufacturers, the acceptance of robots in Europe is accelerating, and has overtaken that in the US and Japan, says Brock. While the rate of increase in the US and Japan is around 25%, it is 37% in Europe and 52% in the UK.

The UK now has 1,753 robots (up from 1,152 last year), based on the British Robot Association's definition of a robot as being a multi-axis machine with at least four axes. However, that is still behind Italy (1,800), Sweden (1,850), France (2,100), Germany (4,800), the US (8,000) and Japan (16,500).

"The 600 robots bought in the UK last year must be kept in proportion," warns Brock. He points out that in comparison with the rest of the IT industry, the amount of cash they represent is low.

Brock attributes part of the increased number of robots in the UK to the Department of Trade and Industry's support for robots, which has included £18.2 million over the past few years.

Despite the imminent shakeout, Brock believes that the DoTI support is still essential as "it helps to create the climate, and fire the board-rooms's imagination".

Brock sees robots as a module in the larger area of flexible manufacturing systems.

Cable TV gets BT games

BRITISH TELECOM is to s computer games to cable tele operator Rediffusion.

BT's Gamestar range will Rediffusion's million subscrib library of games and educati programs for about £10 a m Micronet 800, the microcom viewdata consortium of which is part owner, will supervise ware needs for the project.

BT's cable interactive ser division has developed the rang a value-added service for the c TV operators. The user will g 48K Sinclair Spectrum micro, dem, joystick and a choice of programs, constantly updated.

Talks are taking place betw BT and several other cable co panies about Gamestar. Head cable services Trevor Hawk says the main reason for choo Micronet 800 as supplier is consortium's previous experi of telesoftware on Prestel and knowledge of the Spectrum m ket. He adds that Micronet's many contacts with independ software houses.

Some of the attractive figures you'll meet at COMPEC NORTH'84
Belle Vue, Manchester
19-21 June 1984

72% high-calibre executives
40% responsible for purchases
36% involved in purchases
COMPEC NORTH '84

COMPEC NORTH is the most influential computer show outside London.

It is THE ONLY northern computer show for DP professionals and serious business users.

And in just three days it gives you concentrated coverage of the most important part of your market: directors, DP managers, and other computing professionals from manufacturing industries, services, consultancies, systems houses, software firms and bureaux.

COMPEC NORTH is now in its fourth year, and once again is being sponsored and supported by the leading journals in the business.

So if you want to be at the centre of influence, reserve your stand now at COMPEC NORTH '84. From as little as £92 per square metre.

For your full information pack with booking details complete and return this form to: Chris O'Hea, Exhibition Sales Manager, Room L310, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS. Tel: 01-661 3125

COMPEC NORTH'84
THE WORLD OF COMPUTING IN THE NORTH
Compec North is sponsored by Computer Weekly in association with Computer Talk, Systems International, Practical Computing, Software and Micro Business

Please send me my full information pack about exhibiting at COMPEC NORTH '84
Name
Position
Company
Address
CW

Japanese open barriers to telecomms firms

by Donald Kennett

ONE of the barriers between UK telecommunications companies and the Japanese market — lack of information — will come down next month when the procurement plans of Nippon Telegraph & Telephone (NTT) become available through the European Commission.

The Commission's Office for Official Publications will be taking NTT's published procurement information from a Japanese daily official gazette and putting it into its *Tenders Electronics Daily* bulletin, which is also accessible electronically via Euronet and other public data networks.

NTT's deputy director in the UK, Kunji Maeda, says that the arrangements have been made as a result of talks held through the framework of GATT (the General Agreement on Tariffs and Trade signed by most of the members of NATO).

The US spearheaded the talks three years ago and is already benefiting from the results. Japanese procurement information is being published in the US government news sheet, *Commerce Business Daily*, and the US company Motorola is making significant sales of radiopaging receivers modified to be compatible with the Japanese public service.

Telecommunications equipment has been a notable exception to the provisions of GATT, but is being brought into line.

In the EEC, competition commissioner Etienne Davignon is keen to open up telecommunications markets within Europe. A series of four, high-level meetings is being conducted with the aim of making practical proposals to the Council of Ministers meetin June. UK Industry Minister Fletcher attended the last m November.

UK industry ministers h visited Japan periodically. b year a team of Department Trade and Industry officials by Jonathan Solomon, pres to NTT in Japan a list of high equipment that UK comp would be keen to supply. The partment has also obtained similar list of the types of eq ment NTT is interested in buy and has passed it to UK industry.

A DoTI spokesman says th three UK companies have put p ducts into the Japanese appro process. The identity of the co panies is being kept secret, b they are likely to be the th dominant UK suppliers, GE Plessey and STC.

John Mortier, who is in cha of commercialising the Europ Commission's data banks, s that the Japanese procurement formation will be available in mode this month and will be a service next month. A lot of peo have been asking for Japanese formation, he adds.

The Japanese market is likely provide some important oppor nities for high technology equ ment. NTT's INS (Informat Network System) — an example the internationally agreed conc of the Integrated Services Dig Network (ISDN), which will c voice, data and video signals on same network — is due to start in an experimental mode in Tokyo this September.

High-speed high-quality dig (Group Four) facsimile, is an example of the services that will demonstrated on the INS.

Mini-maker cuts prices

by Philip Huntor

PERKIN-ELMER has joined the battle for the education market by cutting the price of its 3205 bottom-of-the-range supermini by over 20%. The company is offering the mini, with the Unix Edition VII operating system, to UK universities for £16,700. The normal price is £21,670.

Other big US hardware manufacturers such as IBM have already stepped up their campaign in the education market. IBM recently announced a multi-million pound plan to give away personal computers and collaborate with UK universities on development of computer-aided learning.

Mini-maker Prime was one the first in the UK to cut prices schools and universities, and has a generous education ance programme, offering any lege that provides full degr courses 40% off most hardware 80% off software, 50% off do mentation, and 25% off supp services.

The company has anoth scheme for other schools and co leges, which get 20% off hardwa and 50% off software.

Microcomputer makers ha also started an education disco war, with Apple and Commodore both announcing price cuts around 30% to UK schools.

Japanese firms set standard

by Nuala Moran

SEVERAL Japanese electronics companies are getting together to define a standard for local networks for domestic use. The idea is to establish a home bus system broadband AW standard so that all sorts of domestic appliances, ranging from home computers, video and televisions to air conditioning and burglar alarms, can be interconnected.

According to a UK Sharp spokesman: "At the moment, the standard being worked on is just for Japan. It may not be an international standard, and I don't think at the moment the idea is to aim at the international market.

Sony's spokesman found difficulty in commenting on the standard. "There is only one system currently in use which is the Sony TV system. This is a serial communication link for home entertainment such as teletex, viewdata," he observes.

The link allows information to be sent and received by the components on the system. This system is unique to Sony and it is available in the UK.

Rair hires Parkinson

PARKINSON . . . Grooming Rair for a full listing.

by Philip Hunter

PIONEER British micro-maker Rair has taken ex-Systime chairman John Parkinson on board to steer it towards a stock exchange listing.

"I hope to develop the company in the next few years and groom it for a full listing," says Parkinson, who last week became non-executive chairman. He says he hopes to complement the business and product development skills of managing director Mark Potts, and spearhead an export drive, as well as moving the company towards a listing.

About one fifth of Rair's present turnover comes in as royalties from the ICL Personal Computer, which ICL markets and manufactures under licence. Under a renegotiated deal, ICL will market its PC to its large national customers, as well as through its worldwide Trader Point outlets.

Potts believes that the ICL personal computer is neck and neck with the IBM-PC in the UK, with the Sirius the only business micro to outsell it.

Rair also makes microsystems for technical applications, which it markets to OEMs in the UK and abroad through its three subsidiaries, and recently launched a multi-terminal business workstation, which costs about £10,000 for a four-user version.

Parkinson's push on exports will concentrate on the US in particular.

"We already have extremely strong clients there," he says, "but we are only scratching the surface."

US clients include NASA, which uses a Rair box to analyse signals sent back from deep space satellites orbiting Jupiter and Saturn.

Parkinson plans to spend 100 days per year with Rair, much of it with the company's three overseas subsidiaries in France, West Germany and Silicon Valley in the US.

Voice is faster than hand, says Tandem

BRAIN . . . "Grand strategy."

by Claire Gooding

NONSTOP manufacturer Tandem believes voice is better than hand for data entry. It is claiming a 40% improvement in speed and accuracy over manual methods with its newly released Voice Input Option.

Tandem joins such manufacturers as Texas Instruments, Marconi and Logica in trying to prise open the speech recognition market, but Tandem's UK sales director Allen Brain is putting the emphasis on the much wider field of "information transfer".

"There's a movement away from traditional means of data entry, and retrieval," says Brain. "We're strongly committed to developing an information transfer mechanism which can cope with all forms of input, including voice, facsimile, videotex, and image processing. This is just one small part of a grand strategy."

The Voice Input Option uses a microphone fitted to the terminal. This allows operators who need to use their hands for sorting or inspection to enter their transactions without interrupting manual tasks. The advantages, according to Tandem, are increased speed and accuracy.

Tandem has been using the system in its own quality control processing. When printed boards pass through their final inspection, quality control staff speak the coordinates for any faults that they spot into the microphone, saving a great deal of time on keying the data in through the keyboard.

The voice input system has to be "trained" to the voice and vocabulary of a particular individual. The size of the vocabulary is only limited by the disc storage available, and can be in any language. At present, the Voice Option is available only for Tandem's 6530 terminals.

Brain sees finance and banking as front-runners in the applications which could use voice input most effectively. Online transaction processing, goods inspection, medical and travel applications are also on Tandem's hit-list.

The company is on the verge of announcing a major OEM deal for the system with a leading CAD/CAM developer.

The basic price for the voice input option is £1,440; a significant part of Tandem's "grand strategy", since one of the problems of voice input is making the technique affordable.

Tandem sees the conversion of speech into keyboard input as a major market because the price of hardware drops within reach of small-business users.

Reading consortium is born

by Nuala Moran

A GROUP of start-up companies in the Thames Valley area around Reading has formed a standards setting consortium to help give customers more confidence in dealing with small, recently formed companies.

The Software Valley Consortium (SVC) is the brainchild of three ex-ICL Dataskil people who have all set up on their own. According to the consortium's spokesman, David Paynter: "We were talking about dealing with the market place, and the problems caused by cowboy companies that cut and run.

"The idea behind SVC is to establish credibility by fixing standards and so help to give more confidence to customers."

Eleven companies have so far been judged eligible to join SVC, and Paynter says other applications are being considered. "We don't want people with competitive lines of business," he says.

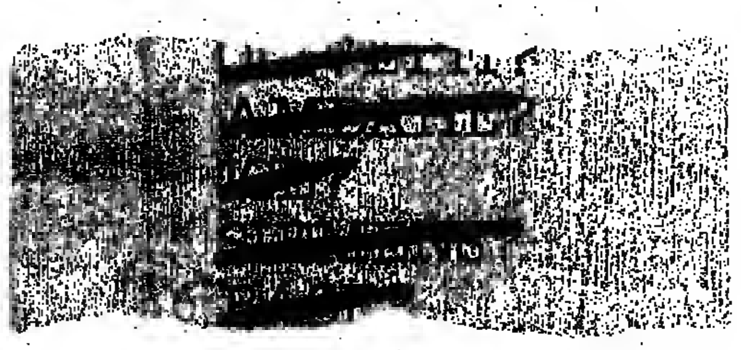
So far, SVC has software houses, micro specialists and business consultancies.

But Paynter stresses that the consortium members want to keep things as free and informal as possible. "After all, our members set up their own businesses to get away from those kind of constraints," he says.

The SVC plans to meet regularly and will exchange business opportunities. "We also think these meetings will help to generate ideas for software products," says Paynter.

The consortium will also consider joint ventures.

¿WHO NOW INSTALLS MORE OF THE LARGEST IBM COMPATIBLE CPU's THAN ANYONE ELSE IN THE WORLD?



WRONG. WE DO.

NAS is now installing the world's largest IBM compatible CPU's with companies who have the most demanding data processing requirements in the world.

Our AS/9080 out performs IBM's 3081 K by over 40% and is establishing a new industry standard for system reliability.

National Advanced Systems

National Advanced Systems (UK), John Busch House, 277 London Road, Isleworth TW7 5AX. Telephone: 01-568 8855. Telex: 8955817/8 NAS UK

Visicorp loses a battle

by George Black

VISICORP has lost the latest round in its battle over the rights to the world-beating Visicalc spreadsheet package. A district court in Boston, Massachusetts, refused to grant an order preventing the program's author, Software Arts, from using the trademark.

But Visicorp says that this only means the issue will have to be resolved in the main lawsuit, which promises to run on for some time.

"It is only a minor setback and we are pursuing the case," says Visicorp's boss in Paris, Jean-Claude Curacs. "We still do not accept that they have any right to terminate their agreement with us or to use the trademark."

Software Arts cancelled its five-year marketing agreement with Visicorp after it said that Visicorp was not using its best efforts to sell the product.

Software Arts president, Julian Lange, says: "It told Visicalc owners they could turn in their product and get credit against their own Visioncalc. That was clearly not maximising Visicalc sales."

He says Software Arts has therefore invoked a termination clause and taken back the trademark. "We will market it ourselves in future," he adds.

Last autumn Visicorp filed a $60 million suit against Software Arts for allegedly failing to meet its contract to develop new versions of Visicalc for the lucrative IBM-PC and DEC markets. Visicorp was angry because it saw those vital markets slipping away to new competitors.

Visicalc was developed originally for the first generation eight-bit micros, where it was the dominant package on Apple and Commodore machines; but the arrival of 16-bit machines re-opened the field in a cluster of rivals.

Software Arts reacted to Visicorp's suit with its own suit for $87 million, claiming that lack of effort by Visicorp at promoting the package breached their contract.

Image system is unveiled

by Claire Gooding

THE wraps came off a "pioneering" image processing system in London last week when Data Logic announced its tie-up with its US originator, Integrated Automation Inc. Data Logic put the Image System on show to 200 people from central UK government authorities, multi-national companies and nationalised industries.

The Image System uses such techniques as optical laser disc storage and document scanners for the first time in a commercial product. This means that it is possible to retrieve an exact image of any document, including film, sketches, illustrated test and hand-written notes.

Data Logic quotes retrieval times of 12 seconds for fetching documents from a database of two million items. Since there are plans to network the Image System, it should be possible for retrieval to be done remotely, from anywhere in the world.

According to Alan Thomas, Data Logic's managing director, the Image System will turn into an enormous international library of documents. "It brings the paperless office one giant step closer," he says.

Data Logic has been discussing the contract with Integrated Automation for about 10 months. "The product fits in with the strategic direction we're taking towards image processing and graphics," explains divisional manager for Image Processing Alan Clark. "The whole area is being looked at closely by IBM and Wang, among others. What we have, here and working, is the ability to tackle the drawing side of the problem."

Clark sees the main areas of interest being among the electronic and engineering industries, where a great deal has to be done by hand. "The Image System means that such industries will be able to use a laser system to retrieve and print hand-written plans and letters, engineering drawings, films and so on, as well as anything traditionally stored by data processing and word processing systems. At present most of this is done by hand."

Typical of the kind of company Data Logic will approach with the system are the nationalised shipyards, engineering firms, such as Rolls-Royce and Westland, British Aerospace.

At present the Image S costs around £300,000, but grated Automation senior p manager Chuck Adams pr that it will come down fi rapidly as the technology be more commonplace.

"At present we're the systems integrator working optical discs," he says. "W the Thomson CSF discs, it have the ability to interface which is already installed."

THOMAS . . . "It brings the paperless office one giant step closer."

Win $100,000 for major recovery

by Philip Hunter

A CHALLENGE has been issued to computer-literate mathematicians: program a computer to make a major mathematical discovery and $100,000 could be yours.

The Fredkin Foundation of Boston has put up the money, and has appointed a 12-member committee of mathematicians and computer scientists to set the rules of the competition.

"Dates are open ended," says Woodrow Bledsoe of Texas University, who heads the panel. "If anyone's got something already we'll take a look."

It will not be sufficient for a computer to play a part in solving an important mathematical problem, Bledsoe declares. "The computer must make a substantial contribution, not just proof-checking. Let a man do the thing the computer normally does."

The winning entry could be a learning program, or a theorem-prover capable of tackling a number of different problems. But the famous program which assisted with the solution of the Four Colour Problem in 1977 would probably not take the prize, because all it did was check through a number of individual cases. There was nothing really intelligent about it, says Bledsoe.

Bledsoe says that the foundation hopes to award the prize by January 1985, but it could be much later than this if no satisfactory entry has been submitted by then.

Bledsoe admires the work of Bob Kowalski at London's Imperial College, who is a keen advocate of the logic language, Prolog. "Bob Kowalski is not on the panel, but I wish he was," says Bledsoe. Kowalski could be a contender for a prize, Bledsoe thinks.

The idea of offering a huge cash prize for solving a mathematical problem is not new. In the 1920s a German industrialist offered a big prize for a solution to Fermat's Last Theorem. Unfortunately the well-known run-away inflation in Germany at that time reduced the prize to pence within months.

At the time a distinguished mathematics professor remarked that there were easier ways to make a fortune than by solving Fermat's Last Theorem. The difference with the Fredkin challenge is that the money is in dollars, and must be won.

Radio show goes on

by Philip Hunter

BARRY Norman's BBC Radio 4 programme about computers has proved so successful that a second series is planned for broadcast in the autumn.

Called *Chip Shop*, the aim of the programme has been to entertain as well as educate, and so far all of the software broadcast to accompany the programme has been for playing games.

A Dutch invention called Basicode, a program that translates the broadcast software into the local Basic dialect of most popular home computers, has gone down well too.

So far the BBC has sold 20,000 at £3.95 each, with orders for 30,000 more, many of which will not be delivered until after the first series ends on March 17.

Meanwhile the BBC is starting a new five-part television series on robotics and production control systems in March.

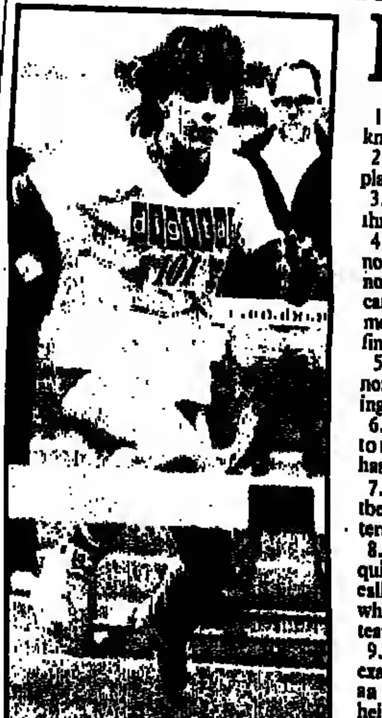
Ian McNaught Davis will present the series, with each 25-minute programme including practical demonstrations using the BBC Micro to control small robots.

In the third programme of the series, a ventriloquist's dummy will be connected to a BBC Micro with a robotics program which will control a set of pneumatic valves via a special hardware link.

The first programme introduces viewers to robotics in general, and to the BBC's own robot, called Buggy, in particular.

The final programme enters the more sophisticated fields of expert systems, and speech and pattern recognition, with their implications for robotics in future.

COMPUTASTARS



Rules for Computadart

1. The competition will be run on a knock-out basis.
2. A match team must consist of three players.
3. The team may be selected from any three of a nominated five players.
4. It is advisable that five players are nominated wherever possible, even if a nominated player is not present, as it can ensure their qualification requirement should the team qualify for the finals later in the year.
5. No substitutes to the five nominated players will be allowed during the competition.
6. No additions/deletions/alterations to the team sheet will be allowed after it has been submitted.
7. The organisers will only recognise the nominated team captain in all matters of selection and disputes.
8. All teams must report at the required time and be ready to play when called upon. Failure to be ready to play when called upon will result in the team being eliminated automatically.
9. In the event of their not being exactly two, four, eight or 16 teams an elimination competition will be held.
10. In all matches, the throwing order of the members of the team must be in strict rotation. Any player throwing out of sequence will cause their team to be instantly disqualified.
11. In matches of three or more legs then the throwing sequence must be maintained. (The first nominated player always starts for their team.)
12. All competition matches will consist of the best of three legs . . . 501 straight start and finish with a double (or the Bull).
13. In all matches the order of throwing will be decided by the toss of a coin. The team that wins the toss will throw first in leg one and three (if necessary).
14. The responsibility for acceptable behaviour for both teams and their supporters rest with the team captain.
15. The elimination competition (see rule 9) and seeding will be conducted as follows. a) Each team will be required to go round the board in strict numerical sequence 1 to 20 and then score any double, any treble, 25 and finally the Bull. b) The fewest number of darts thrown to complete the above requirement will determine the first 75% of the seeds for the knockout competition. c) All teams not in the first 75% will have the chance to try again for the remaining 25% of the places which will go to the teams with fewest darts thrown in either of the two attempts to qualify.
16. In the event of there not being a qualifying round, the seeding for knock-out competition will be decided as per rule 15a.
17. Practice throwing, if any, will be determined by the referee.
18. These rules have been formulated after discussion with the British Darts Organisation. However, the decision of the referee on all matters is final.

COMPUTASTARS

Sponsored by Computer Weekly

Get those entries in for the DP Olympics

ENTRIES close on March 16 for the 1984 DP Olympics. Computastars kicks off in May with the first of four regional heats leading up to the UK finals in Brimingham and the European finals in Holland or Switzerland later in the year, when the UK champions get the chance to battle it out against the Dutch, Belgian and German winners.

Details of the competition and rules appeared in last week's *Computer Weekly* (February 16) — space didn't allow us to publish the rules for the new Computadart contest which is aimed at finding the DP staff who spend longest in the pub at lunch times — so here they are now.

As the whole UK competition is sponsored by *Computer Weekly*, we feel beholden to put in an appearance ourselves, if only to make the other competitors feel good about having someone they know they can beat, so two teams of human flotsam will once again be defending the honour of this journal.

Any queries please phone Gordon Cairns on 01-688 6690.

COMPUTASTARS ENTRY FORM

We have read and accept the conditions of entry and would like to enter:

Computastars	............*Men's team(s)*	............*Women's team(s)*	£39.5
Small units	............*Men's team(s)*	............*Veterans' men's team(s)*	£39.5
Computatug 3 persons	............*Men's team(s)*	............*Women's team(s)*	£6
Computatug 6 persons	............*Men's team(s)*	............*Women's team(s)*	£12.5
Computadart	............*Men's team(s)*	............*Women's team(s)*	£6
Computasprint	Individual	....	£1
Computatrek	Individual	....	£1

*Please delete as appropriate

Computatug 6 person teams will not be held at heats, UK final only.

Company .... Name of contact ....

Address ....

.... Telephone .... Extension ....

Signature of DP manager or equivalent authority ....

Position held ....

We would like to compete in the following region:

BARNSLEY *Saturday May 5*
CRAWLEY *Saturday June 9*
BIRMINGHAM *Sunday June 3*
ENFIELD *Saturday June 16*

Please circle appropriate region

Enclosed is £...... to cover entry fees for the team(s). Cheques should be made payable to Computastars Ltd.

In all matters relating to the rules or conditions of entry the decision of the organisers is final.

Please send entry form with fees to Computastars, 117B High Street, Croydon CR0 1QG. Telephone 01-688 6690.

MICRO NEWS

Simulator tests 16-bit boards

COMPUTER Automation has just made available in Europe test software for 16-bit boards based on a new technique that is almost independent of circuit complexity.

Software simulators that enable circuit designers to spot potential faults without plugging in a made-up board have been available several years, but the usual approach is to generate equivalents of each logic gate. The trouble is that modern boards often have 10,000 gates, and so the model becomes complex.

"With our model you forget that there are gates at all," says Bryan Webster, manager of industrial products in Europe. Instead the system uses a mathematical approach based on the timing diagram, and input/output specification supplied by the manufacturer of the board.

Webster claims that about 90% of potential faults can be found with the simulation software. Intermittent faults caused by loose connections and interactive faults, such as wrong timing, that become apparent only when the board is connected to other hardware, cannot be detected, though.

SCHMID . . . "People do want to buy British".

Seagate moves to double UK slice

US WINCHESTER builder Seagate intends to up its UK market share. It has switched outlets in the UK from equipment maker Christy – itself an OEM customer of Seagate – to component distributor Manhattan Skyline. And through this new exclusive distributorship Seagate hopes to shift £1 million of kit, doubling its low market share. This is Manhattan's first move away from chips.

"We hold about 10% of the UK market," says Seagate European manager Christian Schmid. "We hope to improve on this. The £1 million target would give us about 20% market share."

The UK is well below the European average for Seagate's cut of the Winchester market. Europe gives Seagate 40% share, compared with a worldwide market share of 25%, says Schmid.

"The reason for the UK's low showing is local competition," he says. "And that means Rodime. People do want to buy British and they often look no further than the home-grown product."

Seagate faces local manufacturers in France and Germany too, Bull and BASF, but customers seem to show less chauvinism.

Sales through Seagate's European office account for only 6% of output, but the figures are skewed by the US success", says Schmid. The European figure does not include drives built into equipment in Europe which come through deals signed in the US, nor products that end up here in boxes imported from the US. And there are many very large OEM deals over there, from the likes of IBM, that come in 100,000 of units, rather than mere 10,000s.

Seagate now produces 4,000 5¼in drives a day from its plant in Scotts Valley, California, and has the capacity to double that rate without quality suffering, says Schmid. A drive plant is opening up in Singapore plus a board-stuffing plant in Bangkok which turns out the electronics for the drives. This factory also produces Seagate's new standalone controller board.

The Winchesters made by Seagate are all 5¼in drives, going up to a 20 Mbyte capacity. But at the end of last year the company sprang a surprise when it announced it was to produce its first 8in unit. Most Winchester makers are moving down in physical size.

"We want to aim at the market for drives over 100 Mbytes," says Schmid. "You need room for this, and it's a lot easier to do it on 8in drives. They use real conventional media, so are very cost effective. Seagate produces in volume, so whatever is available is good for us."

People would rather save money than space, Schmid reckons, and the drive will ship for an OEM price of $1,500, rather than the $2,500 Schmid reckons a 5¼in drive with equivalent capacity would cost.

Transnet opens up to large users

By Donald Kennett

IRELAND's only indigenous micro maker, Transtec, is aiming for the large user market by opening up its Transnet local area network to high-selling machines from other manufacturers.

An IBM-PC interface was released last week and it is intended to be the first of a series of interfaces for DEC, Apple and ACT machines which would take Transnet beyond providing printer and file sharing facilities to Transtec's own Z80-based business micro.

Transnet was released quietly to dealers last October, according to managing director Noel May, and 18 or 19 systems have been delivered to UK users.

"This number of sales is quite good," be says, "because it is a product that takes a dealer quite a lot of learning to support – although there is no difference from the operator's point of view from a standalone system."

The company has 40 active dealers in the UK – its main market – many of which sell the Transtec Krypton micro into vertical markets supported by specialised packages, for example to garage, builders and antiquarian bookshops. It has sold about 1,000 micros since it started in the UK in 1981.

The network product has been picked up by 15 of the dealers and May says the number is growing every week.

Development of the network also began in 1981, and May says that launching it has enabled the company to move away from competing just on price because of the tax advantages the Irish government gave it.

It now has unique offerings that fulfil specific market requirements, he says.

The claim to uniqueness is based on the network's ability to support software under various different operating systems in a single-user mode, with some facilities for sharing files. This avoids the overhead associated with multi-user systems and allows users to run their existing software unmodified, although software in the network monitor is designed to make it easy to modify applications software for file sharing purposes.

May says: "IBM has made a major impact on the market and companies like ourselves have to take account of this. That is why we chose the IBM-PC as the first machine for interfaces, because of its share of the marketplace and because the type of companies buying PCs are the kind that understand networking and the needs and benefits of sharing; also the larger company can have someone to specialise in managing the facilities provided by the network."

The Transnet controller contains a 10M byte Winchester disc and it costs £3,550. Workstations cost from £1,175.

The network transfers data at 500 Kbits-per-second, which May says is plenty to support up to 250 workstations in a typical office application. But there is also a 1 Mbps version to be launched in April.

MAY . . . "Unique offerings."

Mitsubishi is on finer lines

JAPANESE chip maker Mitsubishi Electric has developed technology to produce devices with sub-micron features. Using a focused ion beam rather than optical or electron beam methods, Mitsubishi's LSI R&D centre claims to be able to write 0.2 micron line widths with 0.1 micro precision.

The ion beam technology gets round wavelength limitations of optical methods and produces finer lines than electron beams, because of the lower scattering. Mitsubishi expects its technology to play an important part in the development of very high density memory chips.

¿WHO NOW HAVE MORE IBM 3380 COMPATIBLE DISK SUB–SYSTEMS INSTALLED THAN ANYONE ELSE WORLDWIDE ?

WRONG AGAIN. WE HAVE.

On July 23rd 1983, National Advanced Systems (NAS) installed their first 7380 disk sub-system at American Telephone & Telegraph Corp (AT&T) in Jacksonville, Florida.

Since the purchase by the American telecommunications giant, NAS has installed systems in major corporations within the UK, Austria, France, Germany, Italy, Switzerland, The Netherlands, Sweden, Denmark, Australia, Singapore and Hong Kong.

National Advanced Systems

National Advanced Systems (UK), John Busch House, 277 London Road, Isleworth TW7 5AX. Telephone: 01-568 8855. Telex: 8955817/8 NAS UK

COMPANY NEWS

CPS reverses to go to the Market

CPS Computer Group, an IBM systems company based in Warwick, has applied to join the Unlisted Securities Market (USM).

That sounds simple enough, but the company has chosen the peculiarly tortuous route of being "reversed" into an already listed, though suspended, textile company.

L. Messel & Co is placing two million CPS shares at 67 pence. That values the group at £14.7 million.

CPS was set up as Computer Punching Services in 1968 by Edward Robbins. He was joined by Geoffrey Sewell, the current chairman, and Douglas Bridgwater, both from IBM, in 1973.

It now has four main lines. CPS acts as both the holding company for the group and also markets IBM's big systems – 43XX and 308X.

CPS Information Systems handles IBM's middle range; its leasing subsidiary has a portfolio of IBM equipment; and CPS sees its trump card is its growing Data Systems division which is an authorised IBM-PC dealer.

The group's financial record shows that adjusted pre-tax profits have risen from £114,000 for the year ended September 30, 1979 to £736,000 in 1983. Unaudited figures for the three months to December 31, 1983 show profits before tax of £450,000.

The business split has been dominated by CPS and Information Systems which accounted for 70% of turnover and 30% of profits last year. But the Data Systems group is becoming increasingly influential. In the last quarter, it contributed 25% of turnover and 56% of profits, against 15% and 40% for the full year to September 1983.

CPS is quietly confident about its prospects. Sewell gives a "definite maybe" to the suggestion that CPS will look for a full quote in 1985. His biggest problem when introducing CPS was to explain the nature of the reverse takeover.

In essence, a moribund textile group, Olympia (Redacre), which stopped trading last December, has agreed to acquire the whole of the issued share capital of CPS for a consideration to be paid by the issue of shares in the new group. The terms of the deal mean that the existing directors of CPS—the company that has nominally been taken over – become controlling shareholders of the new group – which is to be known as CPS Computer Group. They hold 80% of the enlarged equity.

Sewell was unwilling to part with the 25% of the company necessary to retain Olympia's full listing hence the USM choice.

Olympia has disposed of its trading assets and now holds £1 million in cash, £900,000 of which can be working capital.

SEWELL . . . "Definite maybe" that CPS will seek full quote.

Norbain value soars to £7m

NORBAIN Electronics has come to the Unlisted Securities Market (USM) via a placing sponsored by stockbrokers Simon & Coates.

The quote is expected to give Norbain a market value of around £7 million on a multiple in the mid-twenties. The company is placing 920,000 shares, 14% of the issued share capital, and after expenses it will be left with around £400,000 from the move.

The Reading-based company, founded by chairman and managing director John Nicol in 1973, distributes a range of high technology products – from optoelectronic components to microcomputers and peripherals. Components accounted for around 47% of Norbain's sales and 53% of its profits last year.

In the year ended April 1983, pre-tax profits were £161,802 on turnover just short of £5.5 million. Audited figures for the six months to October 31 1983 show profits of £275,304 before tax on turnover of £4.14 million. Pretax profits of not less than £600,000 to April are forecast.

COMPANY NEWS

Storage Tech loses $40 million

STORAGE Technology has reported substantial losses for the fourth quarter and full year. The 1983 net loss was $40.9 million on revenues of $1.08 billion. In the last quarter the company returned a loss of $7.8 million on revenues down 19% at $229.9 million.

The poor performance was not unexpected: it reflects the company's previously announced decision to abandon development of its 3083 class IBM plug-compatible machine. The loss was made up of $9.4 million from continuing operations and $31.5 million from the mainframe project.

■ Perkin-Elmer saw profits rise 38% to $14.2 million on sales up 16% at $289 million in its second quarter to January 31. At the half-way stage the supermini maker reports sales up 20% at $536 million. Net income was up 5% at $22.8 million.

Robert Sorensen, chairman and chief executive, says that in the second quarter orders were at an all-time high of $343 million against $235 million in the same quarter last year.

DAVIES . . . "Imperative that our products talk to each other".

Famous names to go in shake-up?

INFORMATION Technology Ltd (ITL) has begun a radical reorganisation that will see the end of Computer Technology Ltd, Office Technology Ltd, and Network Technology Ltd, its child companies, as autonomous units.

ITL will change from a holding to a trading company, and the management of its businesses will be centralised into a single functional structure.

The move means that all the group's manufacturing will be located at Hemel Hempstead, currently its largest assembly plant, while research and development, and sales and marketing teams will be merged and report centrally.

Tony Davies, chairman and chief executive of the company, explains: "ITL has built a successful business by operating through autonomous companies. For the last four years we have been heavily decentralised – letting a thousand flowers bloom if you like. But there comes a point when a company of our size needs to centralise, to improve efficiency and co-ordination in our markets."

Davies says that though ITL has benefited from the internal competition and responsiveness of separate business units, a centralised structure will give the group an advantage in the marketplace.

"We talk about the convergence of technologies", says Davies, "and in the 80s it will be imperative that our products talk to each other. We need a structure to ensure that".

Davies adds that ITL intends to have a "serious crack at the OEM business" in 1984. Part of the reorganisation will result in the formation of a team to set up OEM relationships.

The current ITL executive directors and the three managing directors of the subsidiary companies will continue as the executive management team.

Davies cannot say if the CTL, NTL, or OTL labels will stay. "It may be that for tax reasons we'll have to keep them".

ITL headquarters will remain in Winchester, but the group will have to close its offices in Bookham and Reading. The company intends to open a new sales and support centre in Woking.

Centralising the manufacturing effort in Hemel will cause some 40 redundancies at Bookham. Davies says staff have been offered relocation, and he insists that by the end of 1984 the group will employ more people than now.

The reorganisation comes into effect on April 2.

In fiscal 1982 the group returned pre-tax profits of £152,000 on turnover up almost 50% on 1981 at £18 million.

Davies says 1983 revenues will show a rise of at least 40%, and that profits will increase by even more.

Nobody beats these prices.

PRODUCT	PRICE	PRODUCT	PRICE
EPSON RX80FT Matrix Printer	£319	**Context MBA** for the HP 9816	£520
HP 9816 16-bit system	£3285	**TVI 910** Conversational Terminal	£350
HP 82913A 12" monitor	£220	**TVI 970** ANSI terminal	£908
HP 82937A HPIB interface	£250	**TVI 802H/10** Hard disk system	£3750
HP 82900A CP/M option	£250	**TVI 806/10** Multi-user system	£3800
HP 87/13331 Personal productivity software	£185	**TC800** Comms box for TVI systems	£750

And nobody beats our deliveries either – all these products are available now for same day despatch. So phone your order today.

For details of our complete product range, phone for our new catalogues too.

☎ 077-382 6811

MIDLECTRON DISTRIBUTION

Southern Office: N.E.C. World Trade Centre, St Katherine's Dock, London, E1 9AA. Tel: (01) 481 9919 Telex: c/o NEC 884671

Northern Office: Midlectron House, Nottingham Road, Belper, Derby, DE5 1JQ. Tel: (077 382) 6811 Telex: 377879

Datastream steams ahead

INTERIM results reported by the computer-based information service Datastream show healthy progress. For the half year ended December 31 1983, pre-tax profits were ahead 63% at £1.73 million on turnover up 25% at £6 million.

The directors say that they are confident of a good full year, and that profits margins continue to improve. The company was [illegible] clients for all of its online services.

SHARES TABLE

The shares table, which is specially compiled for Computer Weekly, [illegible] selected computer companies that reflect the state of the computer industry

Previous published index 134.28
23/2/84

Index 135.91

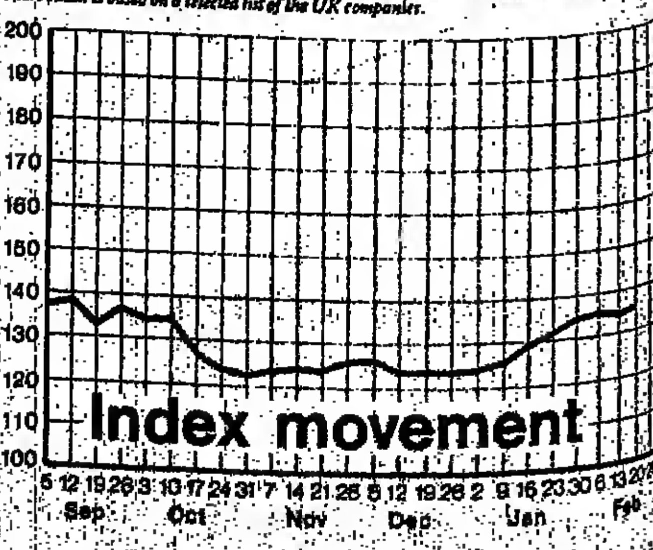
Change

Pence 1984 High	Low	London Stock Exchange Stock	Pence Price	Chge
378	304	Ainsworth (10p)	304	9
631	510	ACT (App Com) (25p)	613	+25
458	415	Atlantic Comp (10p)	445	+30
73	69	B. Bay Kent (25p)	73	+1
171	147	Chubb (20p)	164	+13
144	118	Cole Group (25p)	130	+17
450	415	CASE (20p)	440	-7
790	260	DPCE (5p)	776	+15
280	200	Datastream (5p)	280	+68
625	580	De La Rue (25p)	610	
610	433	Extel (25p)	495	
685	657	Ferranti (50p)	664	+73
186	151	GEC (5p)	184	+6
69	61	ICL (25p)	64	+7
45	39	Kalamazoo (10p)	43	-
265	240	Kode Int (25p)	242	-3
340	290	Logica (10p)	325	+10
293	279	Memec (10p)	279	-
158	144	Muirhead (25p)	146	-1
493	417	N'market (1983) (30.05)	420	-3
3783	2400	Norsk Data	2400	15
190	181	Office & Elect (25p)	181	
1131	1000	Philips Lamp (F1 10)	1000	
734	705	Plessey (25p)	715	+13
35	30	Quest Auto (10p)	33	
218	194	Racal Elect (25p)	210	-19
278	245	Sias Comp (10p)	260	-5
560	540	Systems Des (10p)	565	-8
245	236	Telematrix (5p)	245	+7
675	619	Thorn EMI (25p)	624	+9
137	130	UCAT (50p)	130	
233	206	United Leasing (20p)	221	-1
		Unlisted Securities		
148	121	Acorn (1p)	143	+11
75	70	Bus Comp (10p)	70	
155	120	CPU (5p)	136	-
120	103	Cifer (10p)	117	-
620	585	Consult (C&P) (10p)	600	
295	227	Feedback (10p)	227	-3
117	80	Imm Bus Sys (10p)	suspd	-
82	74	Imtec (10p)	78	-
249	237	Inf'europe Tech (20p)	249	-
35	26	J.S.D. (5p)	26	+5
108	88	M.M.T. (5p)	106	+2
260	238	Memory Comp (B) (10p)	246	+1
300	258	Micro Bus (10p)	305	-5
650	590	Micro Focus (10p)	630	+35
470	375	Micropen (10p)	460	+40
220	212	Miles 33 (10p)	213	-5
58	23	Mnemos (10p)	47	+1
225	157	NMW (C1)	220	-1
237	215	Real Time (5p)	229	+3
179	128	Rolfe & Nolan (10p)	115	+7
97	75	ScanData (10p)	87	+3
80	58	Trident Comp (10p)	68	+2
127	119	Zygal Dyn (5p)	125	-

$ 1984 High	Low	US Stock	$ Price	Chge
20¼	16	Amdahl	[illegible]	[illegible]
29¾	23½	Apple Inc	[illegible]	[illegible]
36¼	31½	Auto Data Pro	[illegible]	[illegible]
67⅛	48¾	Burroughs	[illegible]	[illegible]
9½	7	Comp Auto	[illegible]	[illegible]
13	16	Comp Science	11	[illegible]
11¾	9	Comshare	[illegible]	[illegible]
48	38¼	Control Data	[illegible]	[illegible]
61¾	47¾	Cray Research	[illegible]	[illegible]
45	35½	Data General	[illegible]	[illegible]
29	20½	Datapoint	21	[illegible]
88¾	71½	Digital Equip	[illegible]	[illegible]
34⅞	27¾	Elec Data Sys	[illegible]	[illegible]
13½	10½	Gen Automation	[illegible]	[illegible]
35¼	26¾	Gould	[illegible]	[illegible]
43	34½	Harris	[illegible]	[illegible]
45	36½	Hewlett Packard	[illegible]	[illegible]
66¼	56¼	Honeywell	[illegible]	[illegible]
41¼	32	Intel	[illegible]	[illegible]
124	106	IBM	[illegible]	[illegible]
10¾	60½	Itron Ind	[illegible]	[illegible]
19½	10¾	MDS (Mohawk D)	[illegible]	[illegible]
26¾	11¾	MSA (Mgmnt Sci)	[illegible]	[illegible]
74½	17¾	Mngmnt Assist	[illegible]	[illegible]
9½	7½	Modular	[illegible]	[illegible]
136½	113	Motorola	[illegible]	[illegible]
18½	13¼	National Semi	[illegible]	[illegible]
128¾	110	NCR	[illegible]	[illegible]
30	25¼	Perkin Elmer	[illegible]	[illegible]
20¾	17½	Prime	[illegible]	[illegible]
47¾	41	Raytheon	41	[illegible]
34½	37¼	Signal	[illegible]	[illegible]
49½	38	Sperry Comp	[illegible]	[illegible]
14½	11½	Storage Tech	[illegible]	[illegible]
40	30½	Tandem	[illegible]	[illegible]
40¼	31½	Tandy	[illegible]	[illegible]
141½	127½	Texas Inst	[illegible]	[illegible]
21¼	14¾	Tymshare	[illegible]	[illegible]
36½	29¾	Wang Lab B	[illegible]	[illegible]
11¼	9¾	Wyly	10	[illegible]

Pence High	Low	New Issues	Pence	Chge
82	78	Datasery (5p)	77	[illegible]
185	150	Pansom (15p)	184	[illegible]

The table shows the mid-day prices in London on Friday and closing prices in America on Thursday and the changes from the previous table. Highs and Lows have been adjusted where necessary. Share Index is based on a selected list of the UK companies.



Ma Bell's orphans come to market

SHARES in six of Ma Bell's orphans started trading on the London Stock Exchange last week, in what is thought to be the first example of a combined listing.

The companies, listed below, have been admitted to the official list despite the fact that none qualifies under the Stock Exchange five-year trading rule.

The companies were only created last month when American Telephone & Telegraph, then the largest corporation in the world, was divested of its operating companies.

But there is no doubting their pedigree. All will rank among the current top 20 US companies by asset value.

The seventh regional holding company, Ameritech, which is advised by merchant bank S. G. Warburg, plans to get its listing on March 1. The new slim AT&T keeps its London quote.

Last Thursday dealings in the new companies' stock started in New York in anger. Since November the New York Stock Exchange has conducted a shadow market in the shares, which were authorised but not issued.

Donald Guinn, chairman of Pacific Telesis, Pactel, which provides services in California and Nevada, says: "We view today's listing as a significant first step in attracting European equity investors. We want to encourage European investors to participate in the American telecommunications revolution of the 1980s."

But despite his sentiments most dealing in the shares will continue to be in New York.

Bill Brittingham, Pactel's financial director, says the initial motive of coming to market in London is to become better known, and the quotations are not expected to result in a significant increase in the UK buying of shares in the small Bells.

Pacific Telesis plans to list on the Zurich and Geneva exchanges in May.

Company	Broker
Bell Atlantic	De Zoete & Bevan
Bell South	Scrimgeour Kemp
Nynex	Rowe & Pitman
Pactel	James Capel
SW Bell	Scott Goff Hancock
US West	Hoare Govett
Ameritech	Phillips & Drew

[illegible]

AT&T split-up opens up market, says study

THE consequences of deregulating the US telecommunications market, with the break-up of AT&T, are analysed in two reports produced by International Resource Development and Strategic Inc.

IDR's study, *"Bell Operating Companies – Markets for Telecom Equipment"* says that splitting AT&T has opened a $5 billion equipment market to suppliers of telephones, PABXs, peripherals and computer equipment. And although Western Electric, in its new guise as AT&T Technolgies, is best placed to take that market, there are significant opportunities for other vendors including Northern Telecom, NEC, Comdial and Tie Communications, says the report.

Tie and Northern Telecom have already signed supply deals with all the Bell children.

The study emphasises that the "Divested telcos . . . are far from being just telcos," and it analyses what it describes as the "psyches of the Bell kids" – what sort of business they are likely to concentrate on, where their vulnerabilities lie.

It concludes that the Bell operating companies will be "major factors in office automation," selling a range of OEM products under their own logos.

The second report, *Data Communications Market: Impact of Deregulation*, paints a less enthusiastic picture. "While deregulation will create significant new revenue opportunities for data communications equipment and services suppliers, the associated disruption will also pave the way for the subsequent elimination of many vendors," it warns.

It suggests that a shift of major US carriers from a concept of service to a competitive price-based marketing environment will cause "fundamental dislocation in the data comms market."

The IDR report costs $985. The Strategic study is available in Europe from International Planning Information of Copenhagen, for $1,530.

Company News is compiled by Dave Madden

THEREFORE, WHO IS NOW THE BEST ALTERNATIVE TO IBM IN YOUR COMPANY ?

NAS ✓

THAT'S THE ANSWER.

More and more companies are now choosing NAS – giving us the largest installed base of IBM compatible CPUs in Europe.

This achievement is a result of our superior mainframe and peripheral reliability. In addition, independent experts agree that our personalised service and support back-up are second to none.

Possibly you're still sceptical . . . then give us the opportunity to convince you.

National Advanced Systems

National Advanced Systems (UK), John Busch House, 277 London Road, Isleworth TW7 5AX. Telephone: 01-568 8855. Telex: 8955817/8 NAS UK

Tools get rough ride

NO software tool currently available provides all the facilities needed for project control. This is the conclusion of a working party which contributed to the Department of Trade and Industry's STARTS guide published last week.

The working party says the most serious deficiency in all the relational database management system tools is in estimating the size of applications programs. Being able to size a project as early as possible and refine the estimate as more detail becomes available is of crucial importance, it says.

But the working party is encouraged by the discovery of two stand-alone programs for sizing, called Price-S and Slim, even though this is still far from being a precise science.

The STARTS (software tools for application to large real time systems) guide was launched last week by DoTI, the National Economic Development Office and the National Computing Centre. It will form the focus for a number of public sector bodies striving to standardise the use of such systems.

Most project control tools still require a large mini to run on, the working party has found, but there is a move towards running them on 16/32-bit multi-user micros which could lower the barriers to their use.

Four other working parties report on other key aspects including requirement specification, the design process, verification, validation and testing and version and configuration control.

The first of these groups stresses that the choice of methods was a complex issue and management must be prepared to invest time and money in evaluation, tailoring and training. The cost of acquiring the tools would only be a small part of the total, it says.

It quotes a survey of US aerospace contractors on the major problems facing project managers. Requirement specification is the most frequently mentioned – 97% of managers list it.

All the other major concerns depend heavily on the success of the requirement specification, it is noted. Many managers claim to have tried requirement analysis and found it wanting, the team says. This is due to a lack of understanding of the process and its importance, a lack of tools and of commitment by project managers.

The latter is illustrated by "rationalisations and excuses", such as "it cannot be done cost-effectively", "it is not really necessary", "it cannot be done at all" or "the staff will not understand".

The design process working party reports that much of today's software does not have the basic characteristics of a well-engineered product. Software design is still in the craft phase, it says. But it is encouraging that this is now recognised.

Few tools are marketed in the UK to support the process of verification, validation and testing, according to the guide. In the US, however, over 200 are available, because of the closer collaboration between developer, universities and government.

HOWES . . . *"Gives vendors a far broader market at the lower end."*

Apollo widens Domain

by Claire Gooding

APOLLO Computer has launched a third-party software scheme to help bring its Domain processing system to a wider market.

The software supplier programme will give package vendors a central marketing service, including a catalogue, values and promotional literature, demonstrations and seminars, and regional shares of Domain software.

The scheme imitates similar co-operative efforts started by manufacturers such as Digital Equipment and Hewlett-Packard.

"The reason Apollo is attractive to companies is the number of applications that run on the system," explains managing director David Howes.

"People are able to run applications which used to be available only on mainframes and high-cost hardware on our comparatively low-cost system. It gives the vendors a far broader market at the lower end, where companies can afford a single-user machine."

Apollo is aiming to sign up 30 packages in the next few months, concentrating on its markets of engineering, CAD, architecture and civil engineering.

There are two British companies, Jones, Cassidy and Mellor of Bedfordshire, and Chan of Wimbledon, among the six whose products have been signed.

"The TAS package from Jones, Cassidy and Mellor is typical of the sort of product which was previously only available on mainframes or bureaux," says Howes.

"It's the kind of package which is ideal for a single user – for instance an engineer who needs to run optimisation programs."

Wanted — your views

COMPUTER WEEKLY and Datasolve Education are conducting a joint survey on the use of structured methods within UK data processing departments.

Readers are invited to complete the form below and return it to CW Structured Survey, Room L218 Quadrant House, The Quadrant, Sutton, Surr SM2 5AS.

A selection of responden will be asked if they can b visited for a more detailed a sessment and a report on th conclusions will be printed i *Computer Weekly*.

Name ....

Address ....

.... Tel. No. ....

1. Do you use structured methods for analysis and design? Yes ☐ No ☐

2. If yes, which methodology? ....

Do you use structured programming techniques, and if s which? ....

....

Why did you change to structured methods? ....

....

What benefits did you expect to get? ....

....

Have the expected benefits materialised? ....

....

What specific structured systems tool do you use? (eg dataflo diagrams, structured walkthroughs, data dictionary, structured English, decision tables, data structure diagrams, others.)

....

3. If no, did you decide not to change because of specifi problems, and if so, which problems? ....

....

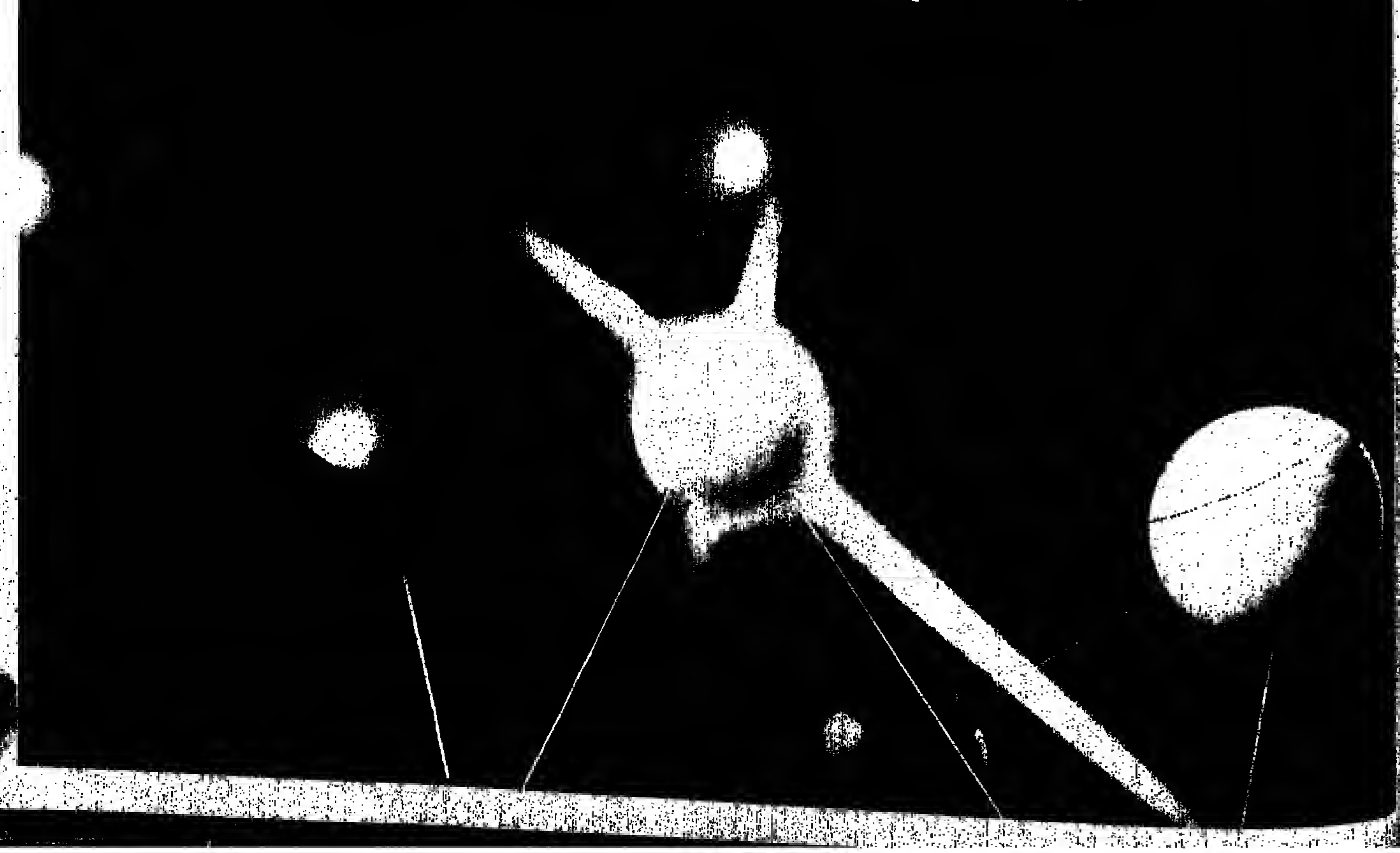
....

Do you plan to take steps towards structured methods? ....

....

Within the next six months? ☐ 6-12 months? ☐ 12-24 months? ☐

PRINCIPLE:
Often the smallest things known to Man can release power of unparalleled potential.



Olivetti turns to MS-DOS for its micro

OLIVETTI appears to be moving away from its own in-house operating system towards the standard MS-DOS for its M20 microcomputer. Olivetti has agreed with Peachtree, a major name in the IBM Personal Computer market, to market the Peachpak productivity suite on its M20.

Peachtext word processing, spelling proof reader, mailing list manager and the Peachcalc spreadsheet programs will be bundled with every M20 running the MS-DOS operating system. Deliveries are scheduled for the spring.

Scicon complex

BP'S computer services arm, Scicon, has bought a 33-acre complex at Milton Keynes to house 400 new staff over the next two to three years. Scicon, which employs around 900 people, opened offices in Milton Keynes 10 years ago and is predicting a 20% growth in its turnover to £24.5 million this year.

Alvey seminar

A SEMINAR on the Alvey Programme's initiative in software engineering is to be held on March at Baden Powell House, Queen's Gate, Kensington. It is being organised by the British Computer Society.

Texas generator

TEXAS Instruments has introduced a new Cobol program generator for its DS990 and business system machines. It is derived from System-80, developed by Phoenix Systems of Pittsburgh, and is claimed to produce over 5,000 bug-free source code lines a day. UK prices will start at £4,500.

HARRY . . . *Estimates there are 200 packages under Unix.*

Uniplus system gets them talking

by George Black
and Claire Gooding

ANOTHER brick has been laid in the Unix wall with the advent of a system that allows easy communication between various makes of micros and minis.

The networking software from the Californian developer, Unisoft, called B-Net, will allow any machine running under Uniplus, Unisoft's close copy of Bell Labs' Unix, to be networked through the Ethernet local area network. This holds out the prospect of easy communication not only between 68000-chip micros, but also with the superminis like the DEC Vax.

This could become significant towards the end of the year, when a new generation of "true supermicros" is expected to hit the market. The machines will offer the power of medium-sized mainframe for under £10,000. These machines, built on 68010 chips, are likely to run a Unix System V system in a six to 10 user configuration, and could pose a serious threat to business of mini manufacturers like DEC, especially DEC's PDP-11 range.

Another push towards System V has come from Microsoft, which now says it will follow the direction proposed by AT&T and Bell Labs. Microsoft has been in discussion for months with AT&T over the new licensing arrangements for System V, which it feared would squeeze margins on its Xenix lookalike, but has decided it must stay in line with the standard. AT&T appears to want a single system to be dominant, to ease its move into the hardware scene.

Logica is now engaged on a study of the conversion of Xenix for Microsoft, but does not expect the upgrade to be available before the end of the year. Xenix-MS-DOS compatibility is still the priority project for Microsoft.

One of the first to climb aboard the B-Net bandwaggon will be Plessey Microsystems, which is busy lining up an array of software for its System 68. It has been negotiating with Precision, Redwood, Bivius, Shortlands and Computerhouse for commercial applications and has decided to bundle Root's Rootmap menuing facility with all its machines.

Plessey's marketing manager, Peter Harry, estimates there are now at least 200 packages available under Unix.

"It's certainly a small number compared with around 1,000 for CP/M, but it's quite enough to work with," he says.

A boost for the applications market came from Cobol specialist Micro Focus last week. It released its Ansi standard Level II compiler and tools for Uniplus to be used by Root Computers and other Unix OEMs.

Micro Focus product sales manager Chris Wilson says that half of the Unix packages available are written in his firm's Cobol.

"Cobol is the glue which binds the whole Unix thing together," he claims.

China helps with oil rigs

CHINA has developed software for the design and analysis of oil rigs, according to *China Daily*. It quotes Yu Xuell, vice-director of the research arm of the Bohai Oil Company, as saying the program was written by his firm with the Dalian Institute of Technology and the Scientific Research Institute of Oil Exploitation and Development.

CAP wins contract to monitor BT calls

by Claire Gooding

THE industrial branch of systems house CAP has landed a major contract worth £2 million to monitor British Telecom's international calls. CAP landed the contract for software to monitor and analyse data at the international telephone exchange against stiff competition from GEC, DEC, Logica and SDL.

The software is designed to handle international calls and convert data into a form by which British Telecom can sort out the complex accounting for the various international calls that get routed through its equipment in the UK.

"The prime motivation is to settle the cross-charging problems that arise from international calls," explains plant control manager Michael Boon. "The situation is very complex, with some calls, for example, from African countries to the US, sent via Paris and London. There has to be a way of accounting for these calls by assessing what goes on at the switching centre."

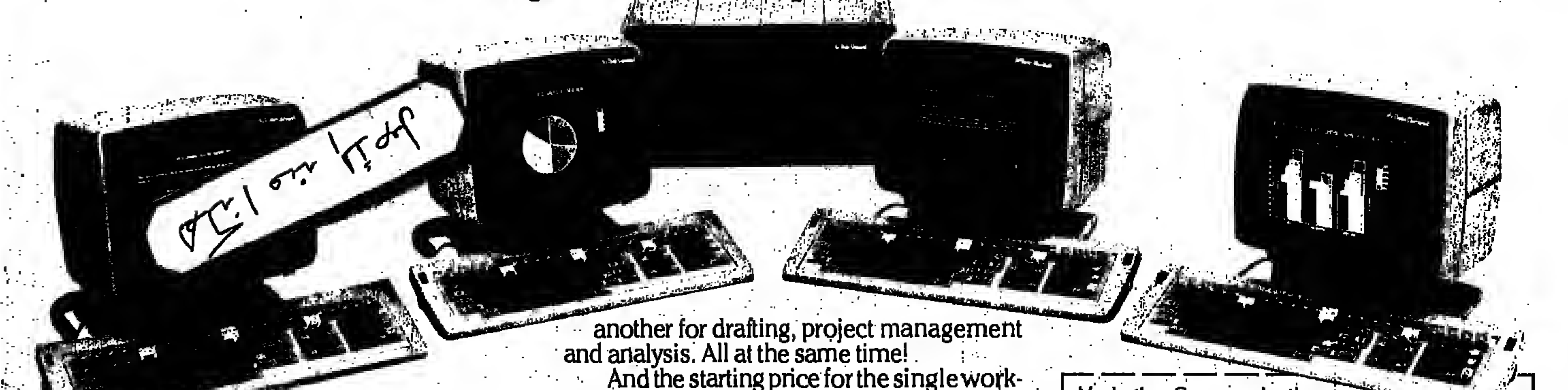
The project will analyse the telephone traffic at the international exchange, Mondial House, collecting information directly off the exchange. The team will be using Fortran, which has to handle data rates up to 375,000 bits per second.

"We did consider Coral at first but settled on Fortran as the best candidate," explains Boon. "Ada didn't get a look-in; it's still not mature enough for our purposes."

The team of 18 is expected to spend two years on the project.

Software File is compiled by George Black

PRACTICE:
Introducing the £2532 DESKTOP GENERATION Micro with the power to run up to 4 terminals.



The DESKTOP GENERATION™ from Data General takes you further than you thought any personal computer could.

It can support up to 4 terminals without the need for a mini or a mainframe. These multiple groups can be connected locally. Or geographically dispersed by connecting them through a Post Office X25 packet switched network or an IBM SNA network.

Nothing else offers so many options in one box: it's perfect for data processing, office automation and technical applications.

One person can be using it for electronic mail, filing and diary management. Another for word processing. Another for data and information processing. And yet another for drafting, project management and analysis. All at the same time!

And the starting price for the single workstation is only £2532.

ALMOST UNLIMITED COMPATABILITY

Firstly, this amazing micro is compatible with all the applications written for Data General equipment over the past 15 years.

Secondly, it takes the widest range of software of any desktop.

Thirdly, it can link-up with IBM SNA and industry standard networks.

Other micros may be fine for computer games. But when there's serious work to be done, come to Data General.

Data General
a Generation ahead

Marketing Communications Division, Data General Limited, Hounslow House, 724-734 London Road, Hounslow, Middlesex TW3 1PD. 01-572 7455.

I'd like all the facts on the DESKTOP GENERATION™ – the system that puts you a Generation ahead.

Name

Position

Company

Address

Tel: CW23/2

Nature of enquiry: User ☐ OEM ☐ Dealer ☐

Interest: Business Applications ☐ Office Automation ☐ Industrial Automation ☐ Other ☐

DESKTOP GENERATION is a trademark of Data General Corporation.
Copyright © 1983 Data General Corporation, Westboro, USA.

PROFILE

Japan trade barriers are a myth, says NEC boss

MIYAZAWA . . . "No barriers if European manufacturers take the right approach."

by John Riley

AKIRA MIYAZAWA believes there is plenty of scope for Europeans to trade in Japan, particularly in telecommunications. As managing director of NEC Business Systems (Europe) based in London for the last two-and-a-half-years, he thinks that Europeans could look profitably at the Japanese market.

"It is a myth that there are invisible trade barriers," he claims. "There are no barriers if European manufacturers take the right approach." For a start, he believes they should open offices in Japan to study the market, and also make use of Japan's external trade organisation (JETRO) centres which are based in each capital city.

"JETRO's role is not only to export goods from Japan, but to promote imports as well," he says, emphasising the opportunities in the telecommunications area.

"Nippon Telegraph and Telephone" – the Japanese equivalent of British Telecom and which is also to go private this year – "is now opening up its markets, and US manufacturers are approaching it to sell equipment," he points out. "I do wish that European manufacturers would take similar efforts to exploit that market."

He adds that there are also opportunities in the Japanese computer market, taking Sinclair's success in competing with NEC's own 6000 series of home computer in Japan as an example.

Although NEC has concentrated on microcomputers and printers in its computer-related hardware drive into Europe, it is a major company in Japan, covering the whole field from home computers to mainframes. Its share of the business microcomputer market in Japan is, according to Miyazawa, about 40%.

NEC has expanded its microcomputer range gradually, starting with its two eight-bit machines, the 8000 and 8800 micros, followed by the launch last summer of its Advanced Personal Computer (APC). The next stage is to secure a wide user base for the APC and then eventually introduce its Astra business system, which is popular in Japan, and perhaps later its minicomputer range.

Miyazawa is now conducting an intensive marketing drive for the APC, expanding his dealer base, and is on the look-out for good software. "To be successful with the APC we need to look for vertical markets," he says, "and need close collaboration with vertical software."

Software is taking on a "more important role" in the company at large. NEC recently bought up a major Japanese software house and is setting up small software companies to work in dedicated areas. "Maybe we'll use the intelligence of European software companies, especially in the UK," says Miyazawa. NEC has already signed up Systematics International to put its accounting packages on the APC.

Sales of the APC have not initially been as large as Miyazawa would have liked, but he is confident that NEC will ride through the wider shake-out currently going on in the microcomputer market.

"The PC business is very risky now and only a few companies, less than 10, will survive," he says.

Miyazawa plans to add another 50 dealers to the 100 he has so far. They will either be general dealers or specialist dealers, specialising in areas such as graphics or CAD/CAM. He does not intend to bring NEC minicomputers to Europe just yet.

"We're not making any effort to sell minicomputers in Europe," he explains. "We have a very successful machine in Japan so it is not a marketing problem, it is a question of software."

While trying to dispel European fears that the Japanese marketplace is a difficult one to enter, he also emphasises that Europe, and especially France, is not easy for foreign communications manufacturers.

"The European market is very difficult for communications manufacturers to penetrate," he says, "because each has its own indigenous manufacturer. But we can see the UK and the Nordic countries beginning to lift barriers so that telecomms can become more liberated."

Miyazawa emphasises the importance of collaboration, and says Japanese companies would be willing to participate in the British long-term R&D Alvey programme. He is visibly proud of Japan's fifth generation programme, believes that collaboration between competing companies in long-term research can work, and adds: "We are calling for international collaboration in the fifth generation programme."

He considers the mix of "competition, co-operation and interdependence" as workable, pointing out that in the fifth generation programme "a consortium of competing companies conducts fundamental research together. They develop fundamental technologies which are brought back into each company, and then the applications technology, based on that work, is developed by each company as it goes in different competing directions."

He says NEC will put more effort into peripherals, particularly with disc drives and discs, but was reluctant to give further details.

On the mainframe front, NEC gave Honeywell Information Systems distribution and manufacturing rights last autumn to its S-1000 mainframe which runs at 15-54 mips (millions of instructions per second).

Miyazawa affirms his commitment to Europe and to the UK market, instancing NEC's factory in Livingston, opened last summer, which employs 200 people and on which £40 million has already been spent.

NEC is also about to move to a new London headquarters, four times the size of the current one.

DOWNTIME

Getting that image right

LIFE on the way to the top can be unfair, or so the people at the world's second largest computer company think.

I was chatting to DEC's new managing director in the UK, Geoff Shingles, the other day about the company's sponsorship of the Schneider Trophy air race.

This, by the way, was for a long time the world's top air race until 1931 when the British won it outright with a plane that was the precursor of the Spitfire. Geoff assured me that there was a connection between 1931 airplanes and Digital in that both involved leading high technology for their day.

But digging deeper into DEC's motivation for sponsoring air races, I found the unfairness of the Digital life.

The company has recently done a survey of the general public to find what they thought of DEC. The answer was an ego-crushing "Not a lot". Many were under the impression, when pushed, that the company made watches.

DEC hopes that this will change a little when the air race is run off the Isle of Wight this June.

"So that's n microchip."

Digging their own graves

TO continue on the theme of the unfairness of life in general, it must be added that some people are never satisfied.

Most of us would think that life in Silicon Valley is fairly satisfactory. It's in California, the climate is pretty good, it's near San Francisco, which is still a very nice city, it's close to some great skiing, there's the Pacific to swim in or sail on – the list goes on.

People also get paid a lot there for working in an exciting and interesting part of the computer industry.

But is that enough? Apparently not. The current wail from the poor little rich girls of Silicon Valley is that they are having difficulty with their "interpersonal relations".

It would appear that in their off-duty hours, the Siliconites manage to rack up the highest divorce rate in the US, the highest incidence for child abuse, high cocaine and marijuana use and a generally messy social structure. They also spend well beyond their considerable means.

Lots of people just go out of their way to be unhappy, and I'm afraid I find it difficult to dig up a great deal of sympathy for them.

Chad

PLATFORM

Some hard facts on software

A RECENT Platform (Computer Weekly, January 19) discussed the choice to be made between packaged and purpose-built software. I believe it lacked appreciation of packages, so was somewhat one-sided in its conclusions.

The development of any new programming application either in-house or by a package supplier, is costly business. An average "per man" cost of a team – including senior management, project leaders and junior programming staff – is now more than £2,500 per man month at today's salaries, taking into account computer time and accommodation.

While the previous article cited low cost as a benefit to packages, it failed to point out just how dramatic the cost difference is: Packages can generally cost about 90% less than the true cost of doing-it-yourself.

Let's take an example: an application relevant to most companies using computers, therefore a typical example, is found in payroll packages. The above team would take about three man years to develop even a simple payroll package – or about nine man years for a payroll package of medium complexity.

Even at the average per man price estimated above, the cost curve mounts dramatically as the complexity increases – £90,000 for a simple payroll, rising to nearly £270,000 for the medium complex payroll.

To buy equivalent payroll software from package suppliers would cost the user about £30,000 for a medium-scale system.

Costs are the key to the present trend toward the package supplier. Large computer users would previously rely on their own in-house computing staff to develop most commonly-used software.

Nowadays, more reliance is placed outside, largely due to the prohibitive costs of in-house development, and the timescales involved.

Good package software allows the company to choose its own rules and mode of operation. It does not impose them. The days are past when packages were designed for a specific application in one company, then sold on as "packages" to other customers in order to spread costs.

Many organisations entering the field of computerisation will start with an incomplete idea of what the computer has to offer. This often results in specially tailored, somewhat inflexible programs being written, which are quickly overtaken by events.

Often, the longer a computer is installed, and the more change has occurred, so the more the user will perceive new ideas and possibilities for the computer that were not even dreamt of when the machine was first installed.

Subsequent changes to bespoke software may be costly. One-off software tends not to be designed for such change and growth.

On the other hand, the package company, with its view and experience of a large number of organisations, is in a good position to anticipate future requirements and to structure its software accordingly.

But cost and flexibility are not the only factors in the choice between packaged and purpose-built software. A decision on whether to lease or buy a package can result in a string of benefits for the computer user.

Quite as important as the original purchase cost considerations is the one of maintenance.

The cost of software is related far more to the cost of on-going maintenance to meet changing management or statutory needs, rather than original purchase costs. It is vital that not only the original cost can be spread among many users, but also that maintenance and upgrading costs can likewise be spread. Once a package is modified, all subsequent changes will be much more expensive, creating a continuous worry to the software user, and a drain on his resources.

With a package, the purchaser is buying peace of mind and fixed costs for the future.

An example of the differences between users of bespoke and package software can be found in the 1982 Budget, which involved many changes in personal tax allowances and employee/employer National Insurance contributions. Contrary to popular belief that reasonable notice is always given, on this occasion changes had to come into operation within one month of their announcement.

This caused considerable problems for some organisations, but for those who were leasing software packages, it was a problem they didn't have to worry about.

Users who develop their own software will also find it hard to keep up with package suppliers on other elements – speed of implementation, security against invasion of sabotage, and maintenance, to name a few.

Finally, the computer is a management tool, there to perform the tasks it is allocated with as much efficiency, speed and reliability as possible, with preferred added characteristics of low-cost, easy maintenance, and upgradability. Packaged software helps to achieve those organisational aims.

If an organisation really cannot find a package that meets its needs, more and more are turning to language generator software to do the job.

Bespoke software comes a poor third and is, in the long run, definitely not the least expensive course.

John Mills

John Mills is managing director of Peterborough Software (UK).

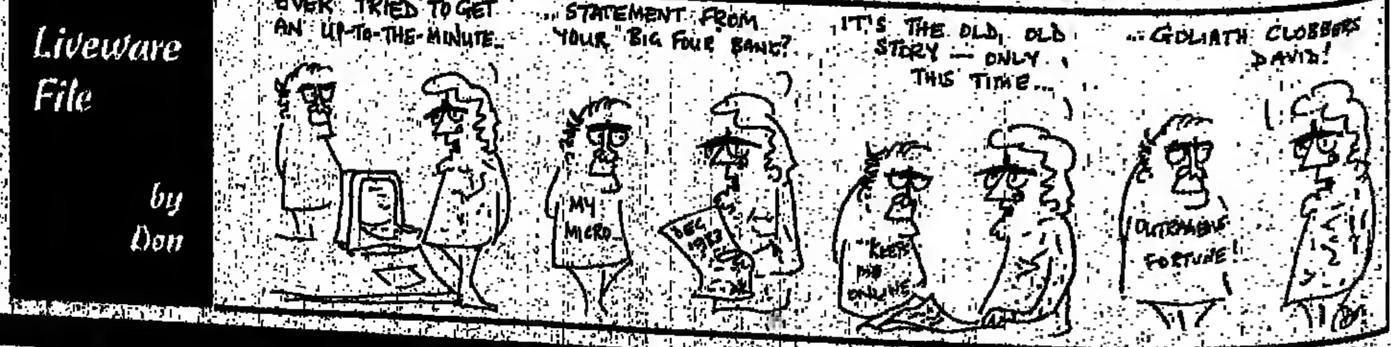
PUZZLER

IN this variation on the cryptarithm theme, each digit in the multiplication sum is one of the four single-figure primes (2, 3, 5 and 7). The only possible solution to this rather tough problem is on page 75.

```
   P P P
   P P x
 P P P P
P P P P
P P P P P
```

10 YEARS AGO

FROM COMPUTER WEEKLY OF FEBRUARY 21, 1974: The first order for an ICL 1901T was placed by Birmid Qualcast in Birmingham . . . Bill Read was appointed managing director of Univac UK . . . British Computer Society subscriptions were increased to £16 for a fellow and £12 for a full member . . . Trafalgar House invested £850,000 in Allied Business Systems.



Liveware File
by Don
EVER TRIED TO GET AN UP-TO-THE-MINUTE..
..STATEMENT FROM YOUR 'BIG FOUR' BANK?
IT'S THE OLD, OLD STORY — ONLY THIS TIME...
..GOLIATH CLOBBERS DAVID!
MY MICRO
KEEP ME ONLINE
OUTRAGEOUS FORTUNE!

ComputerWeekly
Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS
Thursday, February 23, 1984

These absent MPs are a disgrace

IAN Lloyd, chairman of the Parliamentary Information Technology Committee, was quite right to describe the turnout of MPs at an important debate on his pet subject last week as "embarrassing". He could have gone further: it was a disgrace.

The occasion for the debate was a motion by Labour MP for Jarrow, Don Dixon, who called for a searching review of information technology policy.

All political parties agree on the need for a regeneration of British industry, and the new technologies are deemed to be a key factor. But the debate last week drew only about two dozen MPs.

The current obsessions of MPs, which include trade unionism at GCHQ and Mark Thatcher's business dealings, do have important principles behind them. If, however, they cannot rise above the daily political back-stabbing to discuss how to create wealth and jobs then we shall fail to win the fifth generation race and we shall not deserve to.

Is this what we elected them for? It is no wonder they do not want television in the chamber. On the radio a few rowdies can make it sound as if the place were packed. Television would expose the absentees. The frivolous might be tempted to comment "let privatisation begin at home – no doubt Hitachi could run parliament more cost-effectively!"

As Lloyd sardonically observed, the absent majority were grateful to the honourable member for long-suffering Jarrow, who gave them the chance to stay away. Maybe they are "redundant" workers?

The information technology minister, Kenneth Baker, not surprisingly did not rise to Lloyd's challenge about the Cabinet's commitment to science and technology. His expression indicated clearly enough – "you know I've done everything I can" – and MPs on all sides acknowledged this.

Indeed, Baker may have secretly welcomed Lloyd's criticisms of government priorities. In his now familiar speech listing the fruits of his regime, he indicated that he had done all a man could from outside the Cabinet. Of course, he hinted, were there a voice inside the Cabinet on these matters, things might be different.

So far having a science graduate for Prime Minister has benefited science as little as a woman PM has benefited women.

Let us have a Science and Technology minister in Cabinet who will call regular debates and ensure that the Whips do not give the boyo a day off.

At last, some action

AFTER years of giving moral support to the UK software industry, the government has finally put some of its money were its mouth is.

It should be congratulated on this, and it is perhaps ungracious to point out that Ministers have been proclaiming that "British software is the best in the world" without making any noticeable effort to use it.

Now those departments will be able to call in the specialists from the private sector for projects for which its own computer staff lack a depth of experience.

This should increase the quality of government systems. It should also be a boost to software houses. This will not merely be the money for the contracts but also the references that it will give them in their bids for export work.

It has long been a justified complaint of UK software houses that when bidding for overseas work they have had little comeback to the question: why don't you do much work for your own government?

This problem should end with the implementation of the new policy.

But the government must implement the policy carefully. It has its own competent computer staffs and should not go to the private sector for work that can be done by them.

The government must make it clear by its actions that outside contractors are employed only to supplement its own staff and not to replace them, or it will run the risk of demoralising its own computer professionals.

1984 and all that . . .

THIS week's example of the strange things people say about computers was sent in by J. V. Hughes of Bristol, who wins £5. . .

Reliance upon the central processor for online work means that the machine must be reliable – a modem for telephone fault finding by the consultants is essential.

Municipal Journal

LETTERS

Postcodes were not made for computing

MIGHT I, as a purveyor of useless information who is not in the Post Office's employ, make a few observations in reply to J. D. Thompson's letter (*Computer Weekly*, February 9) on postcodes.

Postcodes were never designed to be computed. They should be treated in the same way one treats keys in an index – sequential file – ie they should be as short as possible while still having enough redundancy to enable errors to be trapped and hopefully corrected.

Postcodes can be partially validated by using look-up tables. If the codes are studied carefully, one will notice that 120 out of a possible 652 area codes have been used and on average three or four out of a possible 10 sector codes have been used. In both these fields, the occurrence of the characters used is semi-random.

Finally, the Post Office only uses 20 out of 26 letters for the final two characters, thus giving a further degree of cross-checking. An algorith that validates a postcode to sector level should occupy less than 8kb (including look-up tables). (In *Computer Weekly's* postcode – SM2 5AS – the area code is "SM", the district code is "2" and the sector code "5".)

I have no experience of the accuracy of the National Grid co-ordinates supplied by the Post Office, but believe that the Post Office would do itself and the public a favour if the National Grid co-ordinates were published in the postcode books. Many people would then buy the postcode books for use as an index to their Ordnance Survey maps.

Having written this, I am not suggesting that the postcode system is perfect – far from it! It should not be necessary to have seven different formats of postcode where most other countries make do with one. (For the record, the seven formats are: XX9 9XX, XX99 9XX, X9 9XX, X99 9XX, X9X 9XX, XX9X 9XX and XXX 9XX.)

M. L. VLIETSTRA
Church Crookam
Aldershot
Hants GU13 0LN.

Dicing with problems

THE solution given to the Puzzler (*Computer Weekly*, February 9) is the one usually given to this problem, but is by no means unique without an additional constraint.

The puzzle was: how to mark the faces of two dice so that the probability of any score between 1 and 12 is the same on one throw of both dice.

If we allow negative "pips", there is an infinite number of solutions obtained by adding to each face of one dice and subtracting k from each face of the other, given an initial solution.

I have not proved it, but I conjecture that any solution has dice with equal numbers of each type of face (ie six different, three pairs, two triples).

A total of 12 possible outcomes means that solutions must be of the form six different times two triples. One dice must have a 0, the other a 1.

Because of the addition/subtraction rule, we can say without loss of generality that one die has six different faces, 1 included, the other has three 0s and three of another face. It is fairly easy to see that this other face's value must divide six.

This and addition/subtraction rule give eight solutions with non-negative faces:

123456	000666
012345	111777
123789	000333
012678	111444
12569 10	000222
014589	111333
13579 11	000111
02468 10	111222

The I given, the first is the only one which has no face over 6. The best practical solution is to use a single dodecahedral die!

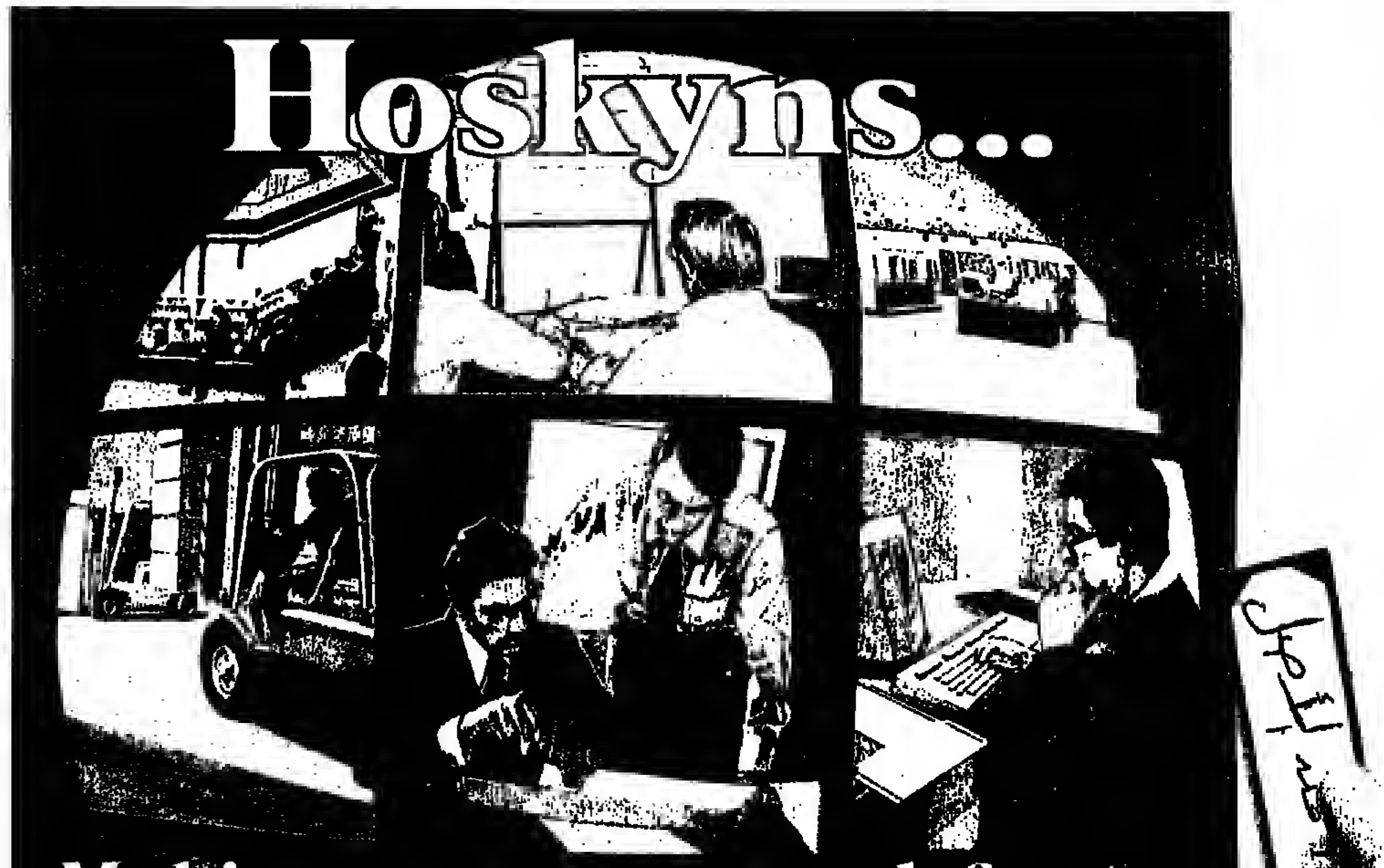
ANDREW YOUNG
Beare Green
Dorking
Surrey RH5 4QL.

Puzzler answer is incorrect

THE answer to this week's Puzzler about dice is incorrect, in that you specify two six-sided dice which are *specially* marked. Your answer includes one dice with *standard* markings.

I believe the correct answer should be one dice marked 0 to 5, and another with three 1s and three 7s. This also gives the same result.

C. M. WARWICK
Crowthorne
Berks.



Hoskyns...
Making computers work for you

For the last 20 years, Hoskyns has helped thousands of Britain's major companies into the computer age. Now that the world is becoming more computer orientated it is even more important that you choose Hoskyns for the systems and services that will enable your company to get the very best from today's information technology.
Through Hoskyns you have access to the collective experience of twenty years successful operation in this rapidly advancing field, the technical excellence with which the name Hoskyns has become synonymous, plus the unrivalled resources of one of the world's largest computer services companies. At Hoskyns the commitment we have to the computer industry means that our clients will be guided securely and expertly into the rigorously demanding future which lies ahead.
Hoskyns Group Limited, Africa House, 64-78 Kingsway, London WC2B 6BL. Tel: 01-242 1951.

FINANCE SECTOR Banking, insurance, leasing and other systems for worldwide markets
MANUFACTURING The world's best selling manufacturing systems – MAS
DISTRIBUTION Systems to meet the complex needs of distributors and retailers
INDUSTRY SYSTEMS Including special systems for hotels, plant maintenance, membership, administration, vehicle management
FINANCIAL ACCOUNTING Comprehensive, high functionality systems for personal computers, minis, mainframes
SYSTEM BUILDING Over 700 consultants, analysts, programmers building all sizes and types of system
TURNKEY Distributors for the major computer manufacturers, supplying complete systems needs
EDUCATION Over 30,000 people from 60 countries have been trained
FACILITIES MANAGEMENT Regional Data Centres for all information processing, including the unique Crossroads service

digital
IBM
ICL
PERSONAL COMPUTERS

1964 1984
hoskyns
MARTIN MARIETTA

PEOPLE

■ Apple Computer has stepped up its European sales and marketing with the appointment of Michael Spindler (above) as vice-president, European group. He previously served as Apple's general manager for Europe.

■ Michael Raby has joined Rediffusion Computers as technical author in the technical publications department. He will initially be engaged in the Teleputer project, preparing user manuals on application software. Previously, he was customer support executive at Comshare for four years.

■ ISG Data Sales is expanding further into the North with a new sales manager, Ian Patterson. Patterson will run a new Birmingham branch office.

■ Dysan of Belgium has appointed Andy Warren as software duplication specialist. He was previously sales manager with Data Concept in London, in charge of diskette sales and formatting.

■ Tony Stevens, formerly with Datapoint, has been recruited by Ericsson Information Systems to head the data terminals division as national sales manager. Sheela Rao has joined as marketing communications manager, based in Ericsson's City office, which will now become a market communications centre. Ron Parkin, formerly Midland regional manager for business systems, has been marketing and distributor development manager, while Ken Briddon is to become national sales manager, business systems division. He was previously Southern area sales manager, business systems.

■ Zynar has appointed Iain M. Brown as European sales manager. He has nearly 20 years' experience in sales and sales management with companies such as Datacall, NCR, Avery and ECS.

■ John Durling, formerly sales manager of Manufacturing Data Systems, has joined Calma to help strengthen its sales and marketing operation for CAD/CAM systems in the UK.

■ Quest International announces the promotion of Jeff Lea to director and general manager of Quest International Computer Systems. He joined the company in April 1983 to establish the personal computer division. He had previously set up a UK dealer network for Data General and has been involved in the microcomputer industry since 1971.

■ SVC Television has appointed Julian May to supervise the creation of a library of software for use in conjunction with the newly-acquired Quantel PAL Mirage. He was previously with Marconi Avionics.

■ Julia Holland has been appointed assistant director (marketing) for Tantus Microsystems, with responsibility for the company's new dealing room system. She was previously European money market manager for Reuters.

■ Andy Judge (above), who joined Synergy as an analyst/programmer, has been promoted to implementation manager. This is a new function and he will be responsible for overseeing major implementations of Synergy's distribution of software packages.

■ *Joanna Dewing (left) has joined Corporate Modelling's team of consultants and is responsible for providing nationwide consultancy and training for Finar users. She previously worked for the Commonwealth Development Corporation, a Finar user, from 1979-83. Martin Armah-Addey (right) has been appointed technical assistant and works with Corporate Modelling's team of programmers. His responsibilities include providing technical support to users, performing site installation of Finar and organising demonstrations for exhibitions and seminars. He was previously an operator with International Distillers and Vintners.*

■ Churchill Controls of Reading has appointed Norman Tyler to the new position of sales manager with responsibility for sales of telemetry systems and equipment to the water authorities in the UK. He joins from Quadrina of Letchworth, where he was sales manager.

■ T. G. Parry Rogers has been appointed non-executive chairman of Percom, the software company which recently attracted investment from the British Technology Group and the National Computing Centre to develop and market personnel management systems which can operate on most microcomputers. Rogers is director of Personnel and Europe, the Plessey company, and was formerly director of personnel for IBM (UK).

■ Antilles-born Peter Gould has been appointed as sales manager for the Benelux and Scandinavian countries by Plessey Microsystems. He joins from STC where he was responsible for the production of hybrids used on System X line cards.

■ Gordon Tebbutt has been appointed as dealer manager, Southern, for Memory Computer Systems. He was appointed to recruit new dealers and to support the existing dealer network in the Southern area.

■ WordNet International has appointed Tony Blyth to the board of directors as general manager. He joins from the Canadian-owned manufacturer and distributor of word processing systems AES, where he was UK director of special projects.

■ *David Corcoran (left) who was assistant manager, technical support group, at Guardian Royal Exchange Assurance, has been appointed manager responsible for GRE's life computer systems development. James Hudson (centre), previously data processing controller of Guardian Royal Exchange Assurance general insurance systems, has been appointed manager of its general and financial systems development. He joined GRE as a systems analyst in 1968, and later transferred to GRE's Australian and Nigerian organisations. David Lodge who was controller, telecommunications, at GRE's data processing department, has been appointed manager, telecommunications. Malcolm Vose (right) who was responsible for overseas and GRE's life systems, will now deal exclusively with overseas liaison. He runs GRE's assisted computer education scheme.*

■ Ralph Gee, until recently database systems manager for Eurolex, the electronic publishing service, has been appointed chief librarian for the *Nottingham Evening Post*, to spearhead the conversion of the editorial library into an online information service, exploiting material which goes back to Nottingham's first newspaper in 1715.

■ Newly-appointed national sales manager for Baric Computing Services is Mike Bryce. He moves to Baric from Burroughs where he was a sales manager in major accounts.

■ Modular Technology announces the promotion of Garry Garforth to UK sales manager. His promotion comes after six months as senior sales engineer.

■ BASF UK has appointed Bob Hogarth (above) as manager of its computer division. Previously divisional head of engineering services, he joined BASF 13 years ago after spending five years with IBM.

■ Gordon Serpla has joined BA Electronics as franchise manager for the Texas Instruments ranges of integrated circuits and other semiconductor devices distributed by the company. For three years he has been a product marketing engineer with Jermyn Industries.

■ David Thompson is now national sales manager at Anker Data Systems. He worked for ADS in South Africa in 1974 and in the UK until 1979 when he joined Tec as multiple sales manager. He was promoted to Northern regional director 18 months later. Mike Berry has joined ADS as Northern regional sales manager from Tec. He will be responsible for the Leeds, Liverpool and Linwood branch offices in a sales capacity.

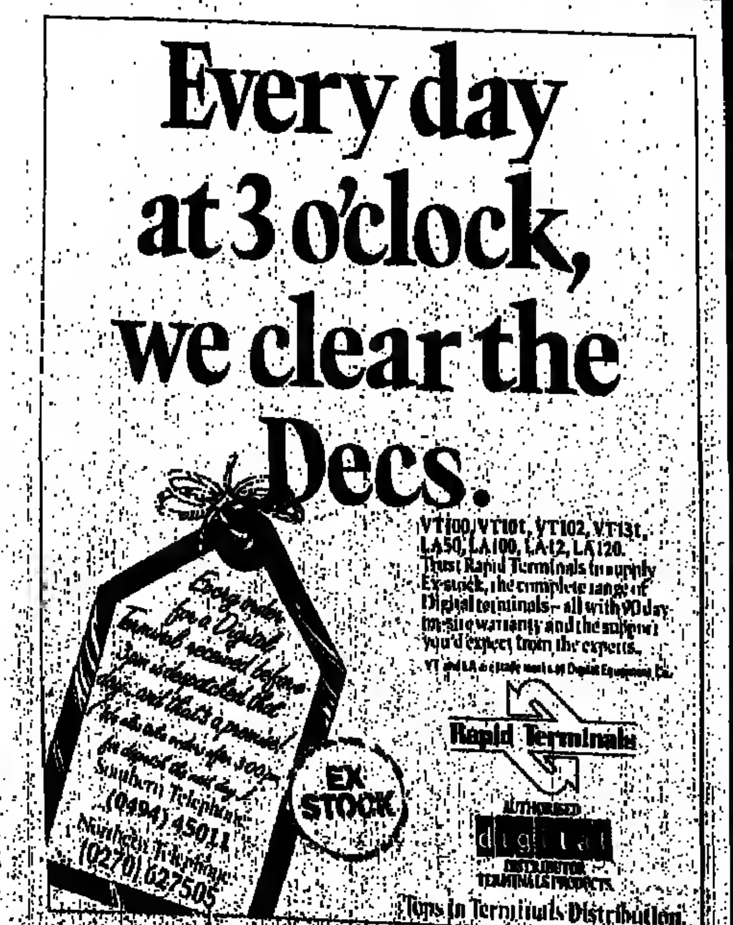
■ Kathy Hansen has been appointed public relations executive for Datasolve. Previously she was editor at Hester Communications, a magazine publishing firm based in California.

■ Sintrom Electronics has formed four new sales divisions to be headed by sales director David Moseley (above). All Sintrom's standard computer peripherals will be classified into three major groupings: the terminals division, the data storage division and the data communications division. A fourth division, the instrumentation systems division, will supply instrumentation and control systems.

■ NCR has appointed Phil Ca[illegible]horn to the new position of the local authority sales manager. His first task has been to establish a sales team based in NCR offices throughout the country, dedicated to local authority systems. Ca[illegible]horn was previously responsible for local authority sales in Scotland.

■ Signex, the marketing and distribution operation of graphics manufacturer Sigma Electronic Systems, announces the appointment of Glenn Vye-Parminter as international sales executive. He has been with Sigmex for the [illegible] years as a UK-based sales executive and was Sigmex's top sales executive in 1983.

■ Bryan Hoy (below) has been appointed international marketing and sales director for Shugart Corporation, with responsibility for marketing the company's floppy, Winchester and optical disc drives and controllers in all regions outside North America. Previously he was responsible for management of Shugart's major international accounts.



Every day at 3 o'clock, we clear the Decs.

VT100, VT101, VT102, VT131, LA50, LA100, LA12, LA120.
Trust Rapid Terminals to supply Ex-stock, the complete range of Digital terminals – all with 90 day on-site warranty and the support you'd expect from the experts.
VT and LA are trade marks of Digital Equipment Co.

Rapid Terminals
Authorised digital Distributor Terminals Products
Tops in Terminals Distribution.

Every order for a Digital Terminal received before 3pm is despatched that day, and that's a promise!
We also take orders after 3.00pm for dispatch the next day.
Southern Telephone (0494) 45011
Northern Telephone (0270) 627505
EX STOCK

DIARY

FEBRUARY 23

Epidemiological Information from Screening Data. BCS Medical Group. Visit to BUPA Medical Centre, Pentonville Road, London N1. 6.30. Contact Mrs D. Scott, Management Services Division, St Faith's Hospital, Brentwood, Essex.

BT Means Business in Telematics. BCS North Staffs. Dr T. F. Smith, BT Research Labs. Physics Lecture Theatre, University of Keele. 8.00.

Expert Systems. BCS South Yorks. I. C. Morrey, Room 529, Sheffield Polytechnic. 7.15. for 7.30.

FEBRUARY 27

The Toolpact Project. BCS Fortran Group. Steve Hague, NAG. BCS headquarters, London. 10.30. Contact Mike Nunn on 01-211 7972.

TSO. CACI course. System Training Centre, Fleet, Hants. £250. Details from Roger Barnes (02514) 22133.

FEBRUARY 28

COM, Its Place in the Future and Auto Fiche Retrieval. BCS Microform Group. G. G. Baker. NCR Theatre, Marylebone Road, London. 9.30. Contact Chris Marles on 01-250 3217/8.

PL/I and Jackson Structured Programming. BCS PL/I Group. John Mostyn, Michael Jackson Systems. 29 Marylebone Road, London W1. 5.45.

Fourth Reading Spring School, Expert Systems. BCS Reading. Six Tuesday evenings from February 28. 8.00. BCS members £10, non-members £25. Contact Alan Staines, 89 St Marks Road, Henley-on-Thames.

Networks. BCS South-west. Dr Ken Heard. Plymouth Polytechnic General Teaching Block. 7.00.

Database Design Concepts. CACI course. System Training Centre, Fleet, Hants. £135. Details from Roger Barnes (02514) 22133.

Reducing Energy Costs with Computer Simulation. Control Data Energy Technology course, Newcastle. Free. For details phone 01-240 3400, ext 3305.

How to Purchase Your Computer. Specialist Information Services seminar. Kensington Close Hotel, London. For further details phone Barbara Pullen on (0734) 345704.

FEBRUARY 28, 29

Personnel — the Microcomputer Solution, half-day seminar series by Missing Link Computers, World Trade Centre, London, free admission. Details: 01-349 4711.

FEBRUARY 29

Lecture Evening. BCS Business Information Systems Group. London School of Economics. 6.30. Contact Colin Campbell on 01-580 5599.

COURSES

■ The Centre for Extension Studies at Loughborough University is offering, in conjunction with Dean Associates, an introductory course, Using Computers in Occupational Training on March 6-7. This course aims to provide the essential framework to allow the trainer to exploit new techniques. Further details from Lynne Atkinson, Centre for Extension Studies, University of Technology, Loughborough, Leics. Tel: (0509) 263171 ext. 213.

■ Frost & Sullivan will hold a 2½-day seminar designed to provide an understanding of the tools and techniques to manage a data communications network, on March 21-23 at the Park Lane Hotel, London. Admission is £425 plus VAT. The seminar should be of particular value to those who have recently assumed responsibility for the design, operation and management of data communications networks. Data communications equipment manufacturers, marketing engineers and support staff could obtain a better appreciation of the operation and management of a data network, says the organiser. Full details are available from Carolyn Budd, on 01-486 0334/5.

■ The 1984 programme of Status Users Group meetings opens with a one-day seminar at the Barbican Centre, London, on Thursday, April 5. The theme is user interfaces to the Status free text information retrieval package. A range of papers is to be presented showing the ways users have implemented Status Command Macros to tackle a variety of tasks. Topics included range from the construction of menu driven query interfaces for inexperienced users to the preparation of printed indexes. Attendance fees for the seminar are £25 per delegate for Status Users Group members and £30 per delegate for non-members. The fee includes morning coffee, buffet lunch and afternoon tea. Further details from Jim Hetherington on (0532) 732442.

■ The Electronic Engineering Association will hold a conference on April 10 with the object of informing interested organisations of the arrangements agreed to date in connection with the acquisition of contracts for work in support of the Alvey Programme. It is also intended to provide the opportunity to discuss and clarify any matters associated with the placing and conditions of such contracts and to offer guidance for those concerned in their own negotiations. The conference will be held at the Inter-Continental Hotel, Hyde Park Corner, London. The cost is £65 (+ VAT) for members and £85 (+ VAT) for non-members. Tickets from EEA, Leicester House, 8 Leicester Street, London WC2H 7BN.

FOCUS ON SYSTIME

Off with the old, on with the new

After a decade of phenomenal growth, Systime has seen the departure of a co-founder. Guy Meredith looks at how the firm is adapting

GOW . . . Saw that DEC minis could be adapted for business.

WHILE Systime has had its fair share of ups and downs recently, in the OEM market it is a company that still sits squarely in the middle.

Not only is it one of Digital Equipment's OEMs — its success was built around the PDP-11 range — but it also has a large list of its own OEMs, to which it supplies systems.

But enough of this confusing, OEM, which sales and marketing director Mike Briercliffe reckons can only confound customers. "You go in and say: 'I'm the manufacturer and he's the OEM.' Eh?"

He prefers the phrase, Independent Sales Organisation, or just third party supplier — though from force of habit he still comes out with the old usage.

Systime's own 50 regular third party suppliers are often young companies which have come to Systime because of its experience with DEC and because it is a fairly young company itself.

"Sometimes large manufacturers have forgotten what it's like to be on the sticky end," says Briercliffe. "One reason OEMs like us is that we haven't forgotten what it's like to be one."

Systime is just over 10 years old and was founded by ex-Digital employee and blunt Northerner John Gow. But in a Geoff Boycott situation in reverse Gow recently quit the Leeds-based company to be replaced as managing director by Rod Attwool, an ex-Texas Instruments managing director who is now introducing democracy and stricter divisions of responsibility into the firm.

> "When Parkinson and Gow were here it was very much their style of management. Now there are 10 of us involved"

The achievement of Gow and his co-founder John Parkinson was, however, phenomenal. In a decade Systime grew from four people in an office to today's £50 million turnover. It has spanking new £20 million headquarters and employs 1,400.

Gow's brainwave was to see that DEC minis could be adapted for business applications, rather than the scientific and process control type jobs they were being installed to do. Because DEC was unwilling to head in this direction, Gow jumped in with his own company to fill the gap in the market.

Briercliffe feels that finding an empty niche and filling it is still the only way for a would-be third party supplier to make an impact. Unfortunately, the niches that are left are rather smaller than they were 10 years ago.

In the mid-70s Systime gradually reduced its dependence on DEC kit. It designed and made its own logic boards, it bought in CDC disc drives, but it was still using DEC processors and operating software under licence.

Then at the end of the 70s the company decided that the time had come to produce its own machines and the outcome was the Intel chip-based, small S-series — so far the 300, 500 and 2000 with prices starting at £3,250. These fit in underneath the PDP-11 and now Vax systems, and are aimed at the multi-user section of the market in which the company has traditionally been strong.

But all this activity, with highly expensive software development and support, made Systime what Briercliffe calls "cash hungry". Then a year ago it received a £13 million capital injection, much of it from Control Data in return for a 38% share stake.

Control Data has since been instrumental in guiding Systime in its big league role, in putting Attwool in charge and preparing the company for a cash-producing public flotation in about two years' time.

During this past decade, the third party supplier market has been changing. "It used to be just a question of price," says Briercliffe. If you could produce a required system cheaper than the man who made it, you were away.

"But now," he adds, "the market is much more dependent on service, support and joint marketing with the manufacturer. If you're building a business, what you need is reliability and availability of expertise."

Systime goes very much hand in hand with its own third party suppliers, to the extent of joint marketing and advertising, and this is an important reason why they come to Systime if they're after a PDP or Vax-based system when they could go direct to DEC.

Istel (formerly BL Systems) is one such company, a systems house which until recently supplied the remainder of the Leyland group and is now expanding outwards to the market at large.

"Istel buys from DEC, but it also comes to us for a whole set of reasons allied to flexibility," says Briercliffe. Flexibility of configurations is one reason. "We're a lot more sensible in some areas. We react to market changes. Also, field service is an important facet — and we have very strong field service."

These third party suppliers have often found niches that won't bring them into direct conflict with Systime. Technology for Business (which used to be Logabax) is buying S-series machines and marketing them under its own label to solicitors, together with applications software jointly developed and owned with Systime.

With the Systime salesforce arranged by market specialisation, Briercliffe has a clear idea of how to avoid conflict of interest with his third party suppliers, others of which operate in the publishing, advertising and insurance fields. However, while specialised software of this sort is not in his salesforce's "first portfolio", it would sell it if it saw the opportunity.

Marketing to third party suppliers, as distinct from end users, accounts for about 30% of Systime's business but with Digital being less than flexible over the reassigning of operating software licences, the small machine and the small dealer look like the best way to expand that figure. "The S-series is attractive," Briercliffe says, "because it gives them an opportunity to get a software project going. We're driving at the low end of the market because service is the key."

Briercliffe thought he would miss the old entrepreneurial Systime that disappeared with John Gow, but has found that not to be the case, and is clearly an admirer of the Attwool, American-style approach which has nevertheless retained the local "no airs and graces" aura.

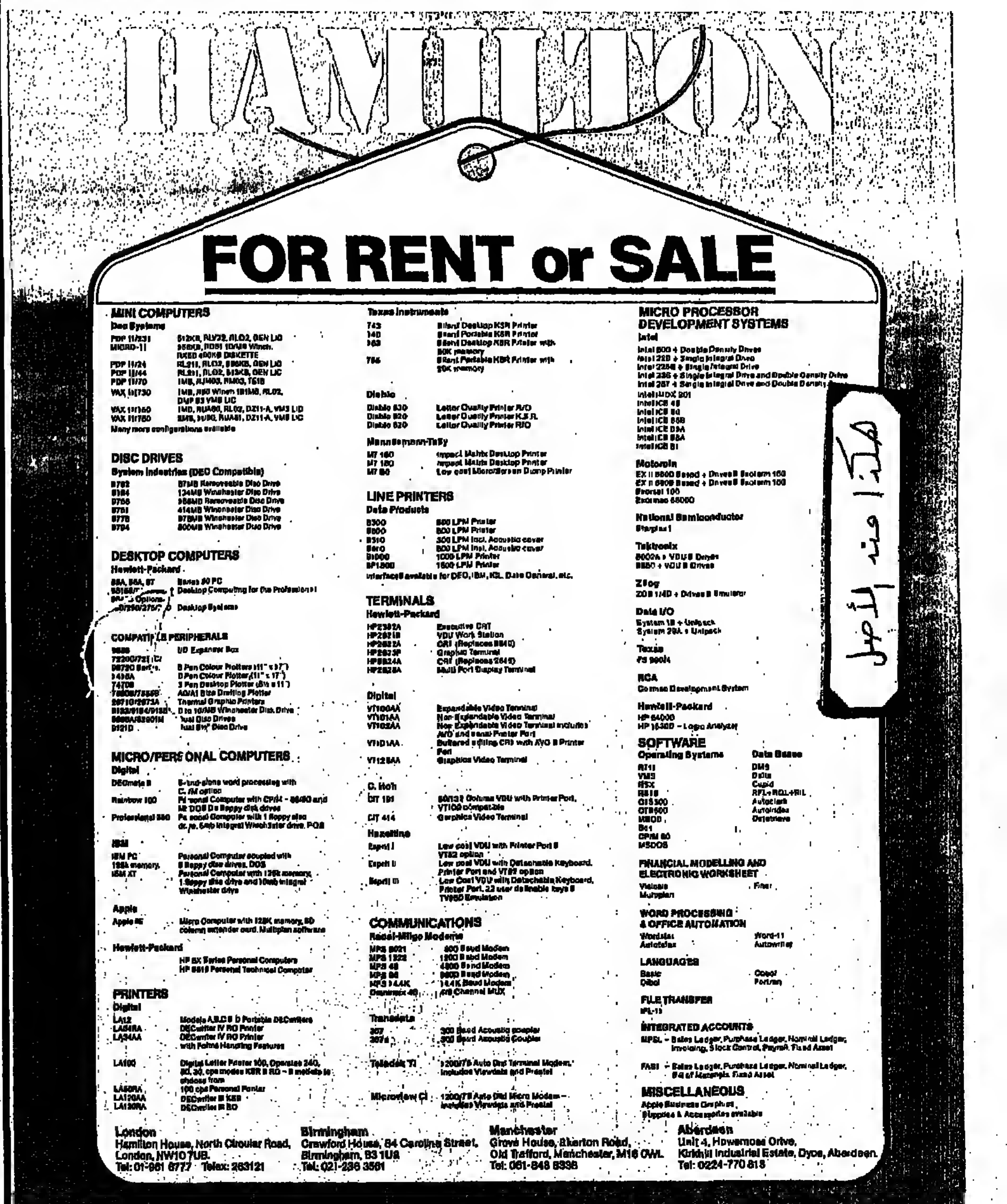
"We're becoming more professional in the art of managing the company. When John Parkinson and Gow were here it was very exciting but very much their style of management. Now there are 10 of us concerned with the running of the company."

Control Data has introduced American procedures, such as strict cost control. "We used to fly a number of things by the seat of our pants," says Briercliffe, "and now we don't. You can't hope to base your company on the thoughts and decisions of a couple of people. Structured management is what we're aiming towards. This guy (Attwool) listens to all. Then when the decision's made, that's the decision. In previous times companies of our kind have been through a stage when decisions couldn't even be made."

In the future, Systime will add to its applications portfolio but doubtless undertake less applications development itself since at £500,000 a time applications packages of 100-200 programs come expensive to develop in-house and easier to acquire ready-made.

Support can also be economically farmed out, particularly to a group of small companies called Systime Associates, some of which are run by ex-employees — although about 10 big selling, "first portfolio" packages will continue to be supported in-house.

Guy Meredith is a freelance journalist.



FOR RENT or SALE

MINI COMPUTERS
Dec Systems
PDP 11/23 · MICRO-11 · PDP 11/24 · PDP 11/44 · PDP 11/70 · VAX 11/730 · VAX 11/750 · VAX 11/780
Many more configurations available

DISC DRIVES
System Industries (DEC Compatible)

DESKTOP COMPUTERS
Hewlett-Packard
Series 80 PC
Desktop Computing for the Professional
Desktop Systems

COMPATIBLE PERIPHERALS

MICRO/PERSONAL COMPUTERS
Digital · IBM · Apple · Hewlett-Packard

PRINTERS
Digital

Texas Instruments
Diablo
Mannesmann-Tally

LINE PRINTERS
Data Products
Interfaces available for DEC, IBM, ICL, Data General, etc.

TERMINALS
Hewlett-Packard · Digital · C. Itoh · Hazeltine

COMMUNICATIONS
Racal-Milgo Modems
Transdata
Teleduk 71
Microview CI

MICRO PROCESSOR DEVELOPMENT SYSTEMS
Intel · Motorola · National Semiconductor · Tektronix · Zilog · Data I/O · Texas · RCA · Hewlett-Packard

SOFTWARE
Operating Systems · Data Base
FINANCIAL MODELLING AND ELECTRONIC WORKSHEET
WORD PROCESSING & OFFICE AUTOMATION
LANGUAGES
FILE TRANSFER
INTEGRATED ACCOUNTS
MISCELLANEOUS

London
Hamilton House, North Circular Road, London, NW10 7UB.
Tel: 01-961 6777 Telex: 263121

Birmingham
Crawford House, 84 Caroline Street, Birmingham, B3 1UA
Tel: 021-236 3561

Manchester
Grove House, Skerton Road, Old Trafford, Manchester, M16 OWL.
Tel: 061-848 8338

Aberdeen
Unit 4, Howemoss Drive, Kirkhill Industrial Estate, Dyce, Aberdeen.
Tel: 0224-770 818

يطلب من الأصل

1884-1984 · CELEBRATING THE FUTURE · NCR

COMPANY PROFILE

"The only computer company that can count to one hundred" – that is the advertising slogan NCR, the US computer giant, is currently using to promote this year's centenary of the company's foundation.

In an industry that appears to be dominated by "young" companies soaring spectacularly into view above the Silicon Valley skyline – and that has seen more than its fair share of business failures in recent months – the fact that any company has managed to survive so long is certainly worthy of comment.

But with NCR there is rather more to it than a mere facility for survival. Look closely and you will see that its history over the last century epitomises the American Dream, and all that that entails.

NCR had humble beginnings, starting life in 1884 when a former farm boy, graduate of Dartmouth College, canal toll booth attendant and owner of a local coal business, John H. Patterson, purchased a controlling interest in a failing cash register company. Charles Christie charts what happened.

Great ideas prepare way for one-hundred-year innings

FRIENDS of John Patterson's among the Dayton, Ohio, business community regarded his involvement in 1884 with the Ritty Incorruptible Cashier as something of a joke.

Patterson, however, had faith in the product – a self-adding wheel cash register. Pausing only to change the company's name to the National Cash Register Company, he soon started introducing improvements to the Ritty machine as well as recruiting a salesforce to sell it.

The rest, as the saying goes, is history.

From a staff of 13 in 1884 based in one office in Dayton, selling a total of 359 units, the company jumped within 10 years to employing 1,200 people, who turned over 18,000 units a year. The year 1896 saw the sale of the 100,000th unit, 1906 the 500,000th, and 1911 the one millionth, setting a pattern for growth which continues through to the present day.

This growth in sales, incidentally, was numerical as well as geographic. NCR was one of the first of the US giants to appreciate the benefits of an international sales network. The company's first international agent, appointed in 1885, was an Englishman, J. W. Allinson, who was based in Liverpool.

By the late 1880s NCR had agents in Eastern and Southern Europe, the Middle East, South America and Australia, and was notching up orders selling to the Japanese and Imperial Chinese.

One vital factor (or "great idea" to use the term favoured by NCR management) of NCR's continuing success has been a continuous programme of product innovation to meet the needs of different customers. An ability to handle foreign currencies, to issue paper receipts, to monitor more and more totalisers, the harnessing of electric motor power – these were all developments that kept NCR ahead of its rivals.

The developments reached a peak in 1921 with the launch of the "mother of machines", the Class 2000, a model combining cash register and accounting machine principles which was to remain in almost continuous production until 1973.

Another breakthrough came in 1929 with the introduction of the Class 3000, a hybrid machine with the capability to add a narrative description. It is claimed to have been the first commercial model to incorporate the principles of Charles Babbage, the "father of modern computing concepts", for rapid calculation and the printout of complex mathematical tables.

On and on the innovations and technological breakthroughs continued, right through into the age of computers. Indeed it is a tradition that is still continued to this day. For example, between 1978 and 1982 spending on research and development at NCR grew at an average of 16% a year and last year amounted to over $250 million.

A second and perhaps slightly more controversial factor contributing towards NCR's success has been "employee welfare", although "paternalistic management" might nowadays be a more suitable term.

PATTERSON . . . Ordered new factory after working on the old, gloomy factory floor.

The story – which may or may not be apocryphal – is that in 1894 an unusually large consignment of cash registers had been rejected by overseas customers as "defective". John Patterson, then still the head of the company, ordered his desk to be moved on to the factory floor so that he could find out what working conditions were really like.

After working in that gloomy environment he ordered the construction of a new factory building "with as much glass as was structurally possible" to admit light and fresh air.

So began the second "great idea" at NCR.

In the years that followed, showers, bathrooms, canteens serving hot lunches, social and professional clubs, and health care schemes were all added to the range of extras from which NCR employees could freely benefit. Nowadays most of these are taken for granted and are duplicated by many large corporations, but in the late 19th century, Patterson's innovations were a radical departure from normal management practices.

Having a good product and a contented workforce to manufacture it bode well for a company, but if a business is to be a success, there must also be someone to sell it. It is here that NCR's third "great idea" comes into play, the virtual invention of the modern salesman.

Back in the American mid-West in the 1880s, salesmen tended to have a rather low reputation with the public, but as the *Saturday Evening Post* put it in an article about NCR a few years ago, "Patterson changed the cigar-puffing, whisky-reeking salesman into a new breed of man". He believed the theory about "salesmen being born, not made" was bunk and started creating his own ideal of a salesforce.

Salesmen were given exclusive territories to work until they were "dry". They were given monthly and annual sales quotas to meet. They were encouraged to wear "conservative dress". And they had to attend formal training courses and conventions.

Sometimes Patterson's methods were unusually harsh. For example, a salesman who had not memorised the "NCR Primer" on sales techniques risked being fired.

Sometimes they verged on pure corn. NCR was displaying signs bearing the message "Think" to "inspire employees to be innovative" back in the 1890s – a ploy which other companies, including IBM, were to follow in later years. And sometimes they were benevolent, with outstanding salesmen rewarded for their efforts with special prizes, holidays abroad, and so on.

There were faults: at this time Patterson, who idolised Napoleon Bonaparte, regarding him as a "democratic dictator", used to ride around NCR property on his horse, Spinner, dictating orders to a corps of management executives trailing in his wake. Nevertheless, NCR proved to be an excellent training ground in modern management methods and sales techniques.

One incidental result was that when any of these personnel either left the company or, as happened more often, was fired for threatening Patterson's authority, the training went with him.

So well were the staff trained in the methods of running a successful business that between 1910 and 1930 an estimated one-sixth of the top management in major US companies were former NCR executives, including Thomas J. Watson, who was later to become the president of IBM.

NCR's fourth "great idea" was its aggressive way of dealing with the competition. Advertising was one tactic employing, once again, methods which in the 19th century were a novelty, but have since become commonplace. Thus, a magazine called *Hustler* containing a reply-paid card was mailed out in hundreds of thousands to potential customers. Direct mail was used to back-up the efforts of local salesmen, and travelling advertisements were attached to the sides of horse-drawn waggons.

Somewhat whimsically Patterson termed these methods "Quaker guns", as they were "pacifist weapons for combatting the competition".

Another Quaker gun was patents infringement litigation, used to devastating effect by NCR to decimate the opposition. An NCR in-house journal described it as "warfare of the most aggressive kind". And it certainly was, for between 1884 and 1897, the number of companies competing in the US cash register market declined from 84 to just four.

By the early years of this century many people regarded Patterson as having got a little too big for his boots. His attitude is neatly characterised by one incident: it was discovered that NCR had unwittingly appointed two more directors to its board than Ohio State legislation would allow.

1884-1984 · CELEBRATING THE FUTURE · NCR

Unlike some of its now defunct competitors, NCR had not been burying its corporate head in the sand

The board concluded that two of its directors would have to go. Patterson's reaction, however, was: "Don't change the directors. Change the law" – a suggestion with which the local attorney-general was only too happy to comply.

Such a situation could not go on for ever and in 1912 NCR found itself embroiled in anti-trust litigation, stemming from the Sherman Act, which for a time seriously endangered the company's future.

Patterson and 21 other company officers lost the first round in the courts and were fined and sentenced to imprisonment on various counts of restraint of trade and unlawful monopoly. They were bailed pending an appeal, eventually heard in 1915, which reversed the decision of the lower court and so removed the threat to the company.

Patterson died in 1922. The company successfully weathered the trading slump of the recession and salesmen continued meeting their targets and attending the conventions. More and more new models were introduced. Employees continued attending company-sponsored garden parties and swimming galas. And the Class 2000 machine kept rolling off the production line.

The story of the National Cash Register Company, however, did not stop in the early 1970s with the shipping of the last of the Class 2000s, and the notching up of the sale of the company's 10 millionth machine.

Unlike some of its now defunct competitors, NCR had not been burying its corporate head in the sand during the previous decades with the computer age approaching.

As long ago as 1938 NCR had established a special research department to study the possibilities of vacuum tubes and relays in business machines. By the late 1940s it was working with magnetic memory drums.

In 1956 it unveiled its first commercially available electronic machine, the Post-Tronic, which used magnetic ledger cards for the automatic verification of posted accounts in the banking business.

In 1960 came the launch of the NCR 390, the company's first low-cost, mass-marketed computer. Then came punched tape recorders, optical scanners, random access memories, the high selling Century series of computers, and MOS/LSI circuitry for [illegible] terminals.

■ Continued on page 19

Employees of NCR were [illegible] to benefit from showers, bathrooms, [illegible] and health schemes at work.

COMPANY PROFILE

NCR century grows out of great ideas

■ From page 18

Finally in 1974, "to reflect the new direction" in which the company was heading, the organisation was given a new name – the NCR Corporation.

A perfect transition from the age of electromechanical cash registers to the era of electronic technology? Well, almost.

As one senior NCR official puts it: "We nearly screwed up the shift from our traditional operations into the computer market. For the first half of the 1970s the company was definitely in a survival mode."

One of the consequences of this traumatic period was that the company was forced to rethink totally its manufacturing and marketing strategies. Diversifications into other areas of business were abandoned. New technologies were bought-in through the acquisition of companies like Quantor in the microfiche field, Comten in data communications, and Applied Digital Data Systems in VDU terminals.

1884-1984 · CELEBRATING THE FUTURE · NCR

Rather ironically, the old National Cash Register Company is now at the forefront of moves to create a cashless society

Then there was the process of "commercialisation". This means that the different manufacturing units within the NCR empire must now submit competitive quotes if they want to win a contract to produce a particular component for a new machine. Thus, if an outside company can put in a better price for, say, the supply of a disc drive system, it will be awarded the contract – not the NCR subsidiary as had previously automatically been the case.

According to Fred Newall, who recently took over as chairman and managing director of NCR UK: "The experiences of the 1970s taught the company a lot of valuable lessons, with the result that not only are we now once more moving forward, but are in a far stronger position to meet the challenges of the 1980s than some of the more traditional mainframe manufacturers, such as IBM and the Bunch."

So just which way will NCR be heading in the 1980s as it enters its second century?

NCR's traditional strength has always been the retail/financial market – a strength reinforced during the 1960s and 1970s with the introduction of its various automated systems for banks and supermarket points of sale (PoS). In the years to come this is likely to continue to be one of the company's main bread-winners, but with perhaps even greater sophistication and integration.

Newall sees the increasing development of networks in the banking and retail worlds with bank automated teller machines (ATMs) and electronic fund transfer in shops (EFTPoS) as being the direction in which the market is likely to move.

But it is not a challenge that worries him. "NCR's special knowledge of banking and retail systems," he says, "puts us in a unique position to handle these developments. We are already managing EFT networks in the US for banking customers and I envisage similar developments in this country shortly.

"After all, why should ATMs be limited simply to being stuck on the outside walls of banks? We will be seeing them in remote installations next, on housing estates where people live, and in factories where they work."

Rather ironically then, the old National Cash Register Company is now at the forefront of moves to create a cashless society.

Another area into which NCR is already starting to move with increasing confidence is office automation, a move in which its workhorse personal computer, the DecisionMate V plays an important part. It is likely to be joined soon by some sort of word processing system.

NCR has some definite ideas on how this is to be achieved. Says Newall: "In the past the office automation process has tended to be rather fragmented, with separate departments in a company all purchasing different personal computers and word processors. What is now needed are industry standards to bring all these systems into line.

"We think we have that capability through our Unix-based Tower system, our distributed processing capabilities and our networking facilities."

Newall, incidentally, believes that Unix awareness is probably greater in the UK than in the US.

So rather ironically as it begins its second century, the company that more-or-less invented the modern-day salesforce, with all its incentives, is now having to move away from these methods in favour of different approaches.

Reflecting this change of emphasis, NCR is also breaking away from its Monolithic approach to total vertical integration in the production process. As well as the change to "commercialisation", it is working increasingly in partnership with outside specialist software houses on the development of products for specific markets.

1884-1984 · CELEBRATING THE FUTURE · NCR

The company is half way through a programme of replacing every major product line with a new generation of systems

It is not all change, however, at NCR. Production of mainframe and comprehensive minicomputer systems aimed at vertical markets is planned to continue well into the future. Vast budgets are still spent internally on R&D, not just on new product lines but also on ways of improving the company's existing range of over 250 different products.

The company is half way through a programme of replacing every major product line with a new generation of systems. It is confident its 32-bit VLSI microprocessor will take off and, in the PoS field, the company is currently working on self-service airline ticket and petrol station systems.

Newall's view is that the company is now "financially in excellent shape and well placed to meet the challenge of the future". While in the US his ultimate boss, Charles Exley, the corporation president, appears to be in an even more optimistic frame of mind.

At a recent presentation to the New York Society of Security Analysts Exley said: "While many accomplishments of past years will be commemorated in 1984, the excitement comes from the challenges and opportunities we are presented with today. This includes working to achieve our objective of becoming a brilliantly successful company."

Fine words which, despite the changing role of salesmen in the NCR empire and the move away from "cash" to a "cashless" society, the company's founder, John Patterson, would surely have appreciated.

NEWALL . . . "The experiences of the 1970s taught the company a lot of valuable lessons."

Country Computers –
The Inside Story

The C3000 series
microcomputer,
including 20MB
Winchester disc
drive, plus FREE
Qume VDU.

FREE OFFER ENDS 30TH APRIL 1984
country computers limited

The C3000 from CCL means reliability and flexibility in a highly cost effective microcomputer package. You also get top performance. The C3000 is one of the fastest systems in the world – including 16-bit types for some applications.

Featuring only five major components, the system is based on the proven Z80A microprocessor, running CP/M. So you have over 6,000 different applications packages to choose from.

To further underline the system's flexibility, it is easily upgraded to network system status. In this form, like CCL's C3005, it can communicate via CP/NET with up to 16 users.

Currently over 1000 C3000 systems are in use worldwide. Backed by a 46-strong dealer network for the UK, our major customers include British Telecom, the Ministry of Defence, the BBC and BASF.

The C3000 is available from less than £3000, with a Free Qume VDU. CCL – when it comes to value, we've got a great deal to offer.

Country
Computers
Limited

Country Computers Limited, Pipers Road, Park Farm
Industrial Estate, Redditch, Worc. B98 0HU.
Tel: 0527 28826. Telex: 337 497 Fistex G.C.C.L.

Please send me details on the C3000 series ☐ Dealer enquiry ☐
End user enquiry ☐ Demonstration required ☐
Name____ Position____
Company____
Address____
Tel.____ CW

COMPANY PROFILE

NCR may be celebrating its 100th year, but it has only been a computer company for 30 of them. In 1953, it entered the computer market with the purchase of the Computer Research Corporation and five years later launched its first system, the 304.

Today, its mainframe range is split into two series – the medium to large V series offering up to four Mbytes of main store and the I series minicomputers headed by the 19050 launched last year.

1983 also saw the introduction of NCR's Unix-based Tower 1632 and the CP/M and MS-DOS Decision Mate V, the company's attempt to move away from the traditional mainframe/-mini market.

This looks to be the familiar story of a mainframe maker jumping on the micro bandwagon but the NCR approach aims to put control of the new systems squarely with the user rather than the DP department, say Paul Walton and Andrew Thomas.

Unix is set to be the future mainstay

THE instigator of NCR's new direction has been company president Charles E. Exley Jr, who formed the five-man office of the chief executive last April. Its task was to develop new products based on the Unix operating system.

"We want to devote our development resources to doing things which have not already been done by someone else," commented Exley at the time.

"Our technology strategy is allowing us to focus better our development efforts on those areas where we will receive the highest return for our investment."

The company's new approach centres around two major decisions. First, Unix is set to be the NCR operating system of the future, right across its product range. The ageing VRX operating system, a batch-oriented product with its roots in the late 1960s, will be run as a subject program under Unix, enabling users to run their existing software without modification whilst developing new applications with Unix.

Second, Migration Path Engineering has been set on the road. This is the title given to the plan to enable users to add new hardware to their systems on a plug-in and switch-on basis without changing applications or systems software.

NCR's $75 million order last December, giving it over 50% of the Norwegian banking market at a stroke, appears to be a vindication of the new strategy.

Fellesdata Data Centre, which handles the business of 190 banks throughout Norway, plumped for 600 5080 automatic teller machines (ATMs), 1,700 Tower 1632s, 3,000 Decision Mate V personal computers, 4,500 Series 500 financial terminals and 2,500 Worksaver word processors.

Product marketing director Graham Miller outlines a mixture of old and new products with which NCR is "committed to becoming the leading office automation supplier by the mid 1980s". Following a reorganisation of the product marketing division, Miller now has all four computer product managers reporting to him.

POIL . . . "We're getting phenomenal meantime between failures with the 9300 – over 8,000 hours non-stop!"

Top of the list comes a new family of V series mainframes, named Instant Ready, which offers non-stop processing similar to Tandem, and features a loose-coupled architecture. It will compete with the IBM 43XX.

Harry Thornhill, marketing manager for the V series, reckons that although the market is still sluggish, the UK mainframe population will still double in the next three years. NCR aims to be in there fighting with Instant Ready, which employs the company's new 32 bit chip set, first used in the 9300 mini last year, to give fail-safe processing.

Hardware elements are duplicated to prevent the system from crashing due to component failure. Increased levels of redundancy do not come cheap, so NCR is offering various levels of performance – up to 100% – as well as different-sized machines.

Instant Ready machines will start at around the 0.55mip level, eventually filling the gap between IBM's 4331 and 303X, says Thornhill. The V series is moving towards becoming a distributed mainframe through operating system changes.

"We're moving away from tight coupling VRX," says Thornhill, "to putting a full copy of it in each processor. A mainframe system can then become a series of distributed processors strung out along a common bus.

"This frees you to add processing power incrementally when and where you need it along the bus. Instant Ready could bridge the gap between VRX and the coming industry standards such as Unix. We could run VRX and Unix side by side on the same processor if we wanted to."

The ability to bolt on new bits of mainframe at will, coupled with the adoption of Unix, allows NCR to integrate them into a system which includes minis and micros – there is a 32bit Unix version of the Decision Mate V on the way.

IBM compatibility is offered through SNA, and peripheral interfaces to everything else through the small computer systems in- [illegible]

TAYLOR . . . "We aim to offer more power and functionality than IBM."

"It won't be noticeably cheaper, we're selling very much better performance," says Thornhill, who is reticent about putting any dates or prices on the system changes other than to say that NCR is working flat out to get them ready.

Unix is set to be the NCR system of the future right across its range

NCR is also just starting to push IBM plug-compatible front end processors (Feps) in the UK. The acquisition of the US communications specialist Comten in 1979 gave the company a sound footing in the IBM-compatible communications market.

The Comten 3725 and the new 3690 compete with IBM's 3705 and 3650 Feps, but, like Instant ready, NCR is selling performance rather than low cost.

"We aim to offer more power and functionality in our Feps than IBM," says Dick Taylor, head of the Comten systems division in the UK, "to save mainframe processing power and increase the comms capacity of a system."

The 3690 has four Mbytes of store and can handle six IBM network control programs simultaneously – three to four times the line capacity of the IBM 3650.

NCR has just begun to push Comten and its ADDS [illegible] – snapped up in another purchase in 1980 – as a wedge into the IBM [illegible]

"If we can show that we offer IBM users more efficiency with Comten and ADDS products, we help not only ourselves, but the rest of NCR's product line too," says Taylor.

The company's plans for the I series minis revolve around NCR's bus architecture in which upgrades are simply effected by plugging in extra hardware.

And Unix again appears on the scene. Although "I" series marketing manager Tony Poil says that many users are perfectly happy with the ITX operating system, Unix will be offered as a separate but parallel product line.

"The 9300 was the first mini to use a full 32 bit chip set," claims Poil. "Having begun with a two Mbyte CPU and comms board, there is a lot we can do to diversify the product."

So we can expect to see smaller and larger, slower and faster I series products soon. Having began life as a low end DEC Vax or IBM System 34 and System 36 competitor, the power and capacity of the 9300 is scheduled to keep rising throughout this year and next.

In fact, NCR has four machines which could be described as minis. The Tower 1632 is its 68000-based machine, running 16 and 32 bit software, and the Decision Mate V personal computer is destined to gain 32 bit capability soon.

NCR has also taken an option on the latest Convergent Technologies NGEN, and an earlier 8086-based product from the same stable forms the basis for the WorkSaver word processor and office automation workstation.

Poil stresses the compatibility of NCR's mini range: "A customer which bought NCR minis in the seventies, or Marks & Spencer's, which bought 300 last year, will be able to run the same programs unchanged," he says.

"The main differences are that the meantime between failures (MTBF) has increased and you now have the chance to bring up Unix systems in parallel.

"We're getting phenomenal MTBF with the 9300 – over 8,000 hours running non-stop!

This will bring down maintenance costs and make the 31 bit supermini reliable enough to become an office machine."

Office automation manager Tony Lozzerini stresses the importance of Unix to NCR's product line:

"Unix," he says, "provides the key connectability and standardisation in any office. We think that office automation is about standards and connectability, with Unix as *the* operating system and, in the short term, Ethernet as the local network.

"Together, these systems create the office or more precisely, the departmental computing environment."

Migration Path Engineering is now definitely on the road

This year, NCR is due to launch more hardware than in any of its previous 99 in business, and a lot more software to go with it. Thornhill cites the example of the terminal application programming system (Taps), acquired from US firm Informatics.

"It's a fourth generation development tool for both the 9300 and Instant Ready machines," says Thornhill. "What we are really saying is that we want to help the DP professional to get rid of applications bottlenecks, to get out of the DP room and offer more services to his users.

"It's not being done with conventional computer systems, you have to innovate."

COMPANY PROFILE

The computer industry has seen many software houses fall by the wayside because they tagged on to hardware makers who themselves went under. That's why choosing the right company is so important.

NCR operating software falls into three categories: "I" (interactive); "V" (virtual); and "portable". "I" software spans the range of NCR interactive minis.

One software house which is right behind the NCR products is Eastman-Stuart, whose managing director is Geoff Rump.

Kevin Townsend went along to this thriving company to see exactly why they sing the praises of NCR, and in what ways the hardware makers are different from the rest.

Ins and outs of the software plan

THE main advantage of "I" software is its compatability. Programs designed for the smallest available system will also run, without the need for recompilation, on the largest system.

There is an inherent simplicity to the operating system which lends itself to ease of installation, system reliability, and easy migration from one processor to another. The trade-off is that the VRX operating system is basically a 1960s batch system, sadly lacking in the sophisticated facilities offered by the competition.

The "V" software turns on NCR's virtual mainframe range, under the Virtual Resource Executive (VRX). "It is quite difficult," says NCR's Mike Wormald, "to see exactly where the "I" philosophy ends at the higher end of the minicomputer range, and the "V" philosophy begins at the lower end of the mainframe range."

Perhaps the best definition is by application: the "I" range belongs to the distributed philosophy with devolved processing, while the "V" range belongs to the traditional mainframe concept.

The "portable" software belongs to NCR's latest offerings, with CP/M and MS-DOS on the DecisionMate V (DMV), and Unix on the Tower 1632.

"Our initial experience," says Geoff Rump, managing director of software house Eastman-Stuart, "is that NCR has produced reliable, well documented and efficient implementation of these industry standard products; and has enhanced the operating systems with a number of its own useful utilities. One, for example, allows the user to take a disc from another manufacturer's computer, and enables it to be read by the DecisionMate."

Eastman-Stuart claims to be the leading supplier of third party software to NCR and NCR users in the UK.

"We supply," explains Bill Morgan, the company's marketing manager, "both package and bespoke software, with all the related services for the complete NCR product range. But we specialise in the interactive systems area, since this represents the greater part of the existing and potential NCR user base."

The company also provides a specialised consultancy service for the computer industry in general, but this is particularly aimed at allowing NCR users to compare proposed NCR upgrades with alternative manufacturers' offerings.

Eastman-Stuart is also a distributor for the NCR I 9000 range of minicomputers, and dealer for the DecisionMate V microcomputer and the Tower 1632 Unix system.

The company recognises two other operational relationships with NCR: sub-contractor, and side-by-side operator. Eastman-Stuart is a major sub-contractor to NCR for its internal-use software, for package software to sell and, to a decreasing extent, for bespoke software to end-users.

Most of this last category now goes directly to Eastman-Stuart and other leading NCR software houses.

In side-by-side relationships, the software company will propose a software solution to a prospective customer alongside NCR's proposal for the hardware. "But before a software house can supply software to NCR as a sub-contractor, or to a user in a side-by-side contract," comments Rump, "it is necessary to become an Accredited Software House. NCR has a rigorous selection followed by a continuous monitoring procedure on technical and financial performance to maintain the standards of and confidence in the software house. And NCR is a very demanding company!"

It was, according to Eastman-Stuart, some years ago that NCR realised it would need to encourage third party software, and that third party supply is essential if hardware growth is not to be inhibited by restrictive software.

Too many software companies fall by the wayside because they ally themselves to only temporarily successful hardware makers

Morgan describes his major software products like this: "We provide selective application packages, concentrating on areas where we have an existing expertise of the commercial problem itself. ITAS is one such example. It is an interactive transport accounting system that covers all the relevant operational requirements and then interfaces to accounting systems wherever appropriate."

One of the customers for ITAS is Forwardair, which runs the system on twin NCR I Series computers first installed in June 1983. Forwardair was the first large air freight company to adopt the system, and Don Cameron, Forwardair managing director, explains why he chose ITAS: "We carried out a management survey on all computers and computer packages currently on the market.

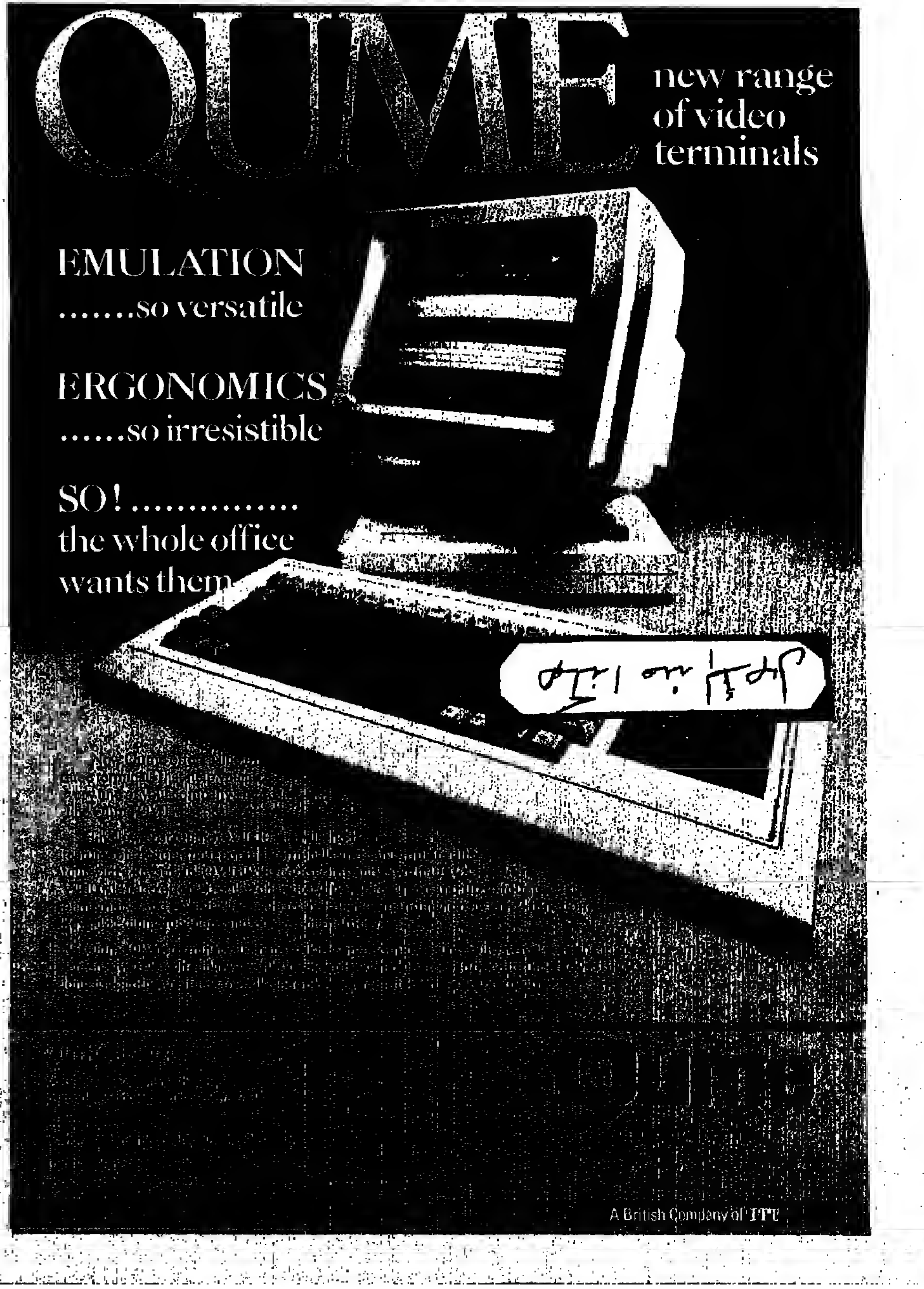
"After considerable research we opted for NCR and Eastman-Stuart as providing the best complete package available; but we were also impressed by Eastman-Stuart's understanding of the air-freight business, and we expect their knowledge to help us keep the system running quickly and smoothly."

One immediate benefit acknowledged by Forwardair is the ability to interface to its existing accounting machine in Scotland, combined with an improved accuracy and throughput of shipping documentation. ITAS stores all customer details and shipment information for both import and export.

"IGMS," continues Morgan, returning to his other products, "is an interactive garment manufacturing system that helps manufacturers, wholesalers and distributors to cope with the specific problems caused by multiple styles sub-divided into many colours and sizes." One leading user for this product is Snowman, a major supplier of childrens wear to the mail order industry.

Kevin Townsend is a freelance journalist.

Clothes suppliers have been NCR users from early days (above) to firms like Snowman today.



COMPANY PROFILE

If NCR is just one of the Bunch when it comes to mainframes, the oldest computer company of them all has a significant lead over the rest of the field in one important area, writes Andrew Thomas.

That area is retail and financial systems, and NCR's traditional strength there stems from a 100-year-long involvement with shopkeepers and bankers.

The company's product line covers everything from simple electronic cash registers to sophisticated point of sale electronic funds transfer systems (EFT-PoS) which put computer power at the disposal of the shop cashier and the customer.

Such installations can obtain clearance for a credit card transaction from half way round the world in five seconds.

In banking, NCR has 51.5% of the UK market with over 3,000 automatic teller mach (ATMs) installed ou order out of a tot just under 6,000. IBM in second place w 36%.

Each ATM handle average of over transactions a day.

Cut costs and reduce fraud

LAST year, NCR's financial and retail systems accounted for $870 million, or 42% of total revenue.

"NCR's background is in retailing," says John Burns, head of retail marketing. "It's where we grew from and we've always looked on it as the background of the company."

NCR installed the world's first EFTPoS system 10 years ago in a British department store. Browns of Chester had branches in Bangor, Exeter and Gloucester and in a joint project with Barclays Bank and NCR installed PoS terminals to automate Barclaycard transactions.

Details of the credit card purchase were collected on an NCR machine in the stores which produced a tape for processing at Barclaycard's Northampton data centre.

Browns was pleased as it was no longer necessary to sort and total the credit card vouchers at close of business each day; the customer was pleased because his purchase was completed more quickly; and Barclays was pleased because no data preparation was required to enter data from the vouchers.

A typical cash purchase takes between 30 and 34 seconds, while a cheque can account for up to 90 seconds. EFT transactions can be completed in seven seconds – and create no paperwork for the retailer.

Mike Gillespie, manager of EFT systems for NCR in the UK, explains the benefits to the retailer: "Not only are you relieved of the risk of losing the vouchers which carry the actual values of the transactions; you don't have to spend hours in the back office sorting them out. And when you consider that at Christmas stores typically do 10 times the normal business, that's some saving."

With the elimination of the paperwork associated with credit card purchases, Gillespie believes that costs to the consumer could be held down, or even reduced.

"EFT saves the credit card companies money. No data prep is needed and fraud is reduced. The retailers are in a good position to re-negotiate terms with the card issuers. If the banks don't pass on the benefits to the other parties involved, there's no incentive to carry on with the systems.

"Cash withdrawals from ATMs incur 50% less bank charges than do cheques, so EFT transactions should also cost half as much," he says.

Gillespie illustrates what can be done with EFT by citing the example of the Iowa Transfer System in the US. Development of the systems started in early 1974 and over 200 banks now issue debit cards (similar to a cash point card but which can be used in shops as well as ATMs) to 250,000 customers.

The motorist fills up, then puts his credit card into the pump for automatic debiting of his account

The cards can be used in supermarkets in the state of Iowa using NCR 8455 processors linked to PoS terminals incorporating laser scanning – the technique of reading bar-coded information on products at the checkout which removes the need to enter item prices and codes on the cash till.

The supermarkets also have ATMs installed in order that customers can check on the state of their bank accounts before they shop.

Eleven mainframes at eight data centres handle the online transactions from both the supermarkets and almost 500 ATMs. The customers accounts at the 1,000 banks which use the system are automatically debited.

In the UK, one of the largest EFT systems was installed by NCR in the 18 branches of the Army & Navy department store chain, in London and South-east England. The network includes 600 2151 and 2152 PoS terminals linked online to three T8270 processors at the Army & Navy data centre at Chiswick in West London.

The store had operated its own credit account system for some years, and between 1980 and 1982 worked with NCR to develop the system to handle Access, Barclaycard and American Express cards.

Access and Barclaycard transactions are recorded by the cashier entering the card number on the keyboard of the PoS terminal, which is checked against a file of stolen or otherwise undesirable cards held on the machines at Chiswick.

As the credit card companies can input the transaction data directly into their own mainframes, there is no need to produce the usual voucher and the PoS terminal prints a standard Army & Navy bill for the customer.

American Express purchases are handled in a similar way, with an online link to the Amex data centre in Brighton, then onward to the Amex operations centre in Phoenix, Arizona, for a credit authorisation.

The maximum response time for this operation is six seconds, the average transaction taking five.

"Because American Express cards are used all over the world," says Gillespie, "it needs one central authorisation service. If *you* can shop in London and New York on the same day, so can a thief."

Another retail area ripe for the introduction of EFT is the petrol station. There are already pilot schemes in operation in the UK in which the motorist fills up, then puts his credit card into the pump for automatic debiting of his account.

"Within 10 years the vast majority of retailers in the UK will have EFT in most branches," predicts Gillespie. "It will be the exception to find a store not accepting your debit card. We've installed over 100,000 PoS terminals worldwide to date."

Gillespie believes the speed of EFT can be off putting for customers who traditionally pay by cheque when they have insufficient funds in their accounts at the time, in anticipation of their salaries being paid in before the cheque has time to clear.

"It doesn't mean funds will be transferred in real time. The Credit Agricole system in France holds up the transaction tapes for two days before sending them to the banks, so that an EFT purchase takes the same time to clear as a cheque."

GILLESPIE . . . "You don't have to spend hours in the back office sorting things out."

And other than customer reticence to accept EFT, retail marketing head Burns also sees the UK banks hanging back from development systems here. "In the US the trend is towards independent EFT networks accepting any credit card. These networks run their own data centres and sell the transactions to the banks, cheaper than the banks could do it themselves.

"The UK banks would like to control EFT, but they can't move fast enough, so it looks as if the same will happen here.

"The banks are not in a position to offer a nationwide service for some years – they're not starting a pilot scheme until 1986 – but the retailers want it now."

While EFT has still to take off in the UK, the ATM market has almost reached saturation point, according to Roy Burton, manager of financial terminal systems.

"In-branch ATMs are the machines which are becoming more widespread. We could produce a totally-automated bank as far as cash handling goes, but you can't replace all the humans with machines."

"The first generation of through-the-wall machines was the simple £10 cash dispenser," continues Burton. "IBM was first with what you'd call an ATM when it launched the 2984 around 1972. Our first machine, the 770, appeared in 1975.

"It was very large, having been designed for the US market where they like things big. It weighed three tons including a three-inch thick safe. The later 1780 was designed specifically for the UK banks and was much smaller, more flexible regarding software, and only half the bulk.

"One US bank builds its own, bigger fascia for the new 5080 model because it thinks the standard one is too small. The IBM and Burroughs ATMs are much bigger than ours too. British banks often have problems installing the larger machines because the buildings are usually quite old and the floor heights inside mean that a big ATM – and there a lot more to them than the front would suggest – would have to be mounted impossibly far up the wall on the street side."

NCR's ATMs hold up to £30,000 in cash (more in some currencies) depending on the deno nation of the notes. This i past has proved tempting crooks.

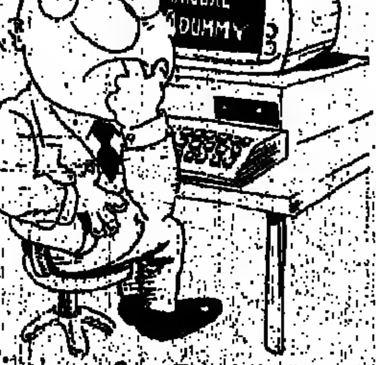
A robbery took place in Fr where the entire three-ton mac was ripped out of the wall taken away. "But it wasn't ou ours," says Burton.

"The UK bank would like to contro EFT, but they ca move fast enou

NCR's ATMs hold up to £30,000 in cash

URTON . . . "Can't repla the humans."

It could be so much simpler.



Training for Lotus 1-2-3™

2-day workshops run weekly.

NATIONAL TRAINING SYSTEMS
93 Gloucester Terrace, London NW1 4PJ
Telephone 01-935 4555

Lotus 1-2-3 is a trademark of Lotus Development Corporation.

COMPANY PROFILE

Times change, and so too do computer manufacturers' product lines. In common with the majority of its contemporaries in the computer business, NCR has been radically changing its product portfolio, and taking the small business microcomputer close to its corporate heart.

Such changes bring with them an inevitable and commensurable change in the overall profile of the NCR user. To the traditional pattern of mainframe and minicomputer users has now been added that unknown quantity, the small business person.

This is producing the one potential ripple in an otherwise calm and placid pond of NCR users, which make up NCUA, the NCR Computer User Association.

Ken Staple is the chairman of the NCUA, and vice principal of a major NCR user, the De Haviland College in Boreham Wood. He recently acquired 30 NCR Decision Mate microcomputers, so he is also aware of the need for the association to gird itself to meet the challenge of the new machines. Here he talks to Martin Banks.

Users meet with the future

THE challenge of new machines is one that the NCR Computer Users Association is not facing alone. "One of our big problems at the moment – one that most user associations are facing – is how to move forward to meet the future," says chairman Ken Staple. "We are facing a strategic planning decision over the new machines, especially the Decision Mate."

That decision is going to involve a certain amount of restructuring within the NCUA, in spirit if not in reality, so that the new users can be accommodated in ways that are meaningful to them.

That restructuring will predominantly take the form of adding to the association's existing activities, rather than chasing them. These will then provide what Staple calls the central strength around which other activities can operate independently.

Those existing activities are based around quarterly general meetings of the 240 Association members. At these meetings there is the chance to air the apparently minimal number of grievances and to demonstrate and discuss new products, or new releases of old products.

The meetings are also open to third party companies. Staple illustrates: "At a recent meeting we had a presentation from a American company, Century Associates, of a new software product called Office Ware. This is a Lisa-like package that incorporates windowing facilities. As such it has nothing to do with NCR at all."

The NCUA is open to membership from any user operating an NCR software driven machine, and in the past that has led to a tidy and well-ordered structure to the association. With the arrival on the scene of not only the Decision Mate, but also the Tower multi-user machine, the NCR user base is set to broaden.

Staple feels that the best way of bringing reasonable order to this changed situation is to allow for a fair degree of "disorder" through the growth and development of local sub-groups. It is an approach the association is already exploring.

"We are just about to start with a special interest group for retailers and distributors," says Staple.

"NCR has always been strong in the retailing business, of course, with its history of making cash registers," he continues, "but now there are completely integrated systems available.

"Even small shop owners can get a till that has quite a large memory, some processing capabilities, and communications links to mainframe or minicomputers. Such users have special needs within the terms of the user association."

The NCUA has already spun off a couple of other special interest groups in the software field. These are dedicated to the all-important areas of operating systems. There is one group that meets to consider the VRX operating systems, and another that focuses on the I Series user needs.

As the association has made the fundamental move to allow Decision Mate and Tower users to become members of the NCUA it is now facing up to the problem of how to deal with them. "Obviously," Staple says, "users of the Decision Mate and the Tower are going to want other meetings than the four general ones, so we are going to sponsor a special interest group."

What form this group will take has not been decided. Indeed, as the users of the machine are something of an unknown quantity to the NCUA, it will be left to these new members to formulate their own approach within the overall structure of the association.

Staple feels it is essential that they join the NCUA. "We always encourage all users to join the NCUA," he says. "I feel the users need that central strength to bind everything together."

To help provide this "glue" the association is planning for the first of what it hopes will become an annual two-day jamboree. "This will be the focus event of the year," Staple explains. "Then, with the other general meetings the structure should be flexible to allow it to take different forms.

"Instead of laying down a very definite constitution for the interest group, they will almost form an entity of their own. All they will have to do is adhere to one or two rules designed to help link them together when necessary."

The focus event is scheduled to take place on June 20 and 21 at the Majestic Hotel in Harrogate and will mark the coming together of all the different sections within the growing spectrum of NCR users.

The arrival on the NCR product scene of the Decision Mate, the Tower multi-user system and the 9300 processor potentially puts at risk the company's reputation for its hardware among users.

"The changes at the bottom end of the product range are quite extensive," Staple says, "and the recent introduction of the new machines means that few users have experience of them."

Staple is at the front end of the experience-gathering process on the new hardware. De Haviland College has just taken delivery of the 9300 machine, together with some 30 Decision Mate micros. These are linked together using a DecisionNet networking system, so that each micro can be used as a standalone machine, as part of the network, or as a terminal.

About the only bone of contention is in the area of software support

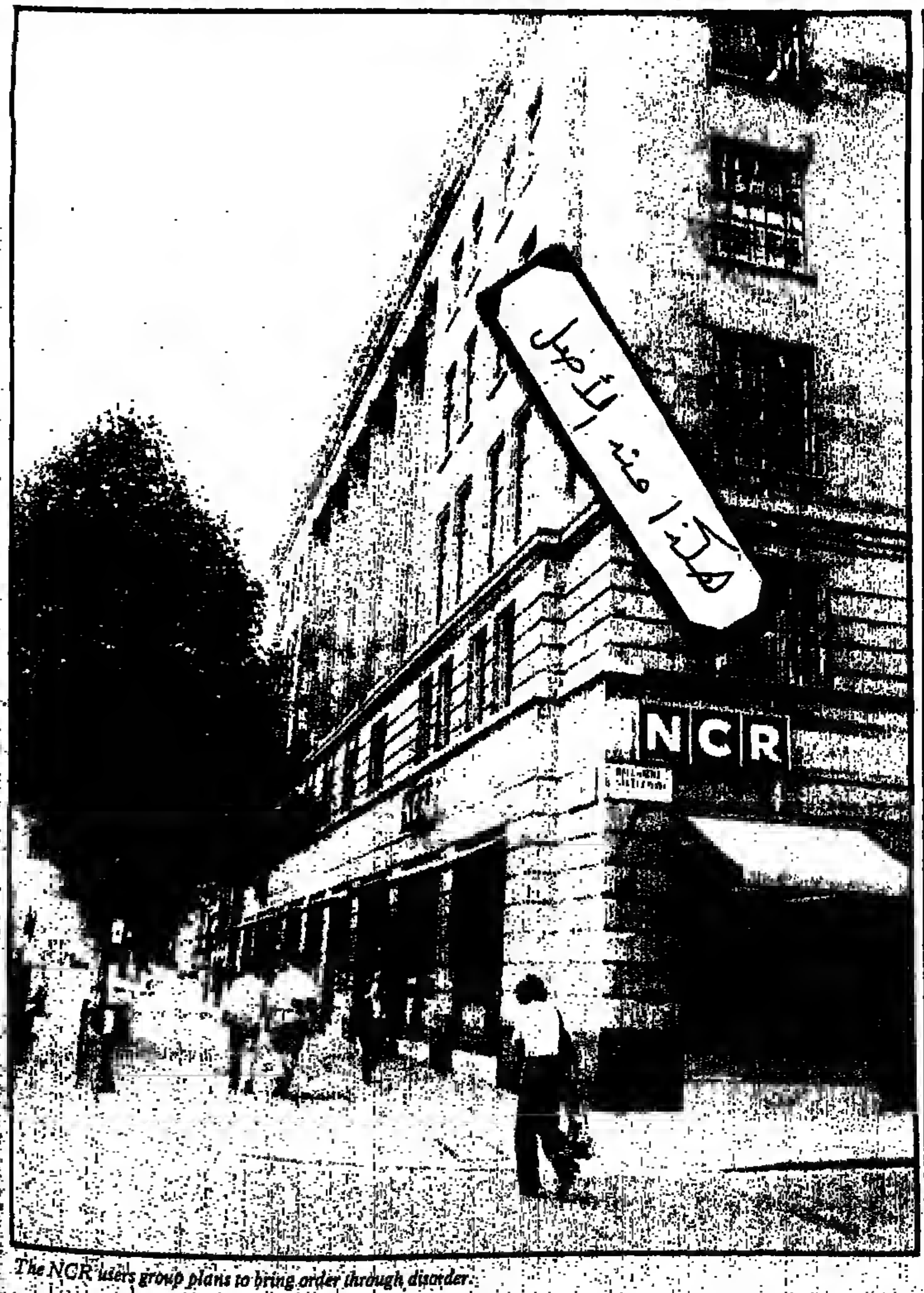
Just about the only bone of contention that currently exists between users and company is in the area of software support. This is highlighted by another NCR user, Edwin H. Bradley, a Swindon-based building company. DP manager Derek Parkinson says: "We carry out our own software support on our VRX machine, though the software is not as user friendly as it could be. It has been difficult to diagnose faults, locate bugs and correct them.

"NCR's support has been good, but it shouldn't be necessary."

NCR has recently introduced a new central software services support scheme, to which all users are obliged to subscribe. An integral part of this service has been the introduction of a telephone hot line.

While this scheme is of considerable benefit to some users, the larger users, which can solve their own problems, are unhappy about not being able to opt out of the service. Even here, however, the differences between the NCUA and NCR are mild, for users also get a full range of software updates as part of the subscription.

Martin Banks is a freelance journalist.



The NCR users group plans to bring order through disorder.

Eastman-Stuart
the NCR Specialists

for
- Software development
- Software and hardware sales
- Implementation and training
- On-going maintenance and support
- Hardware and software evaluation

need we say more?

FOR THE COMPLETE
CUSTOMER SERVICE

Please ring Bill Morgan on 0923 771139 for more information
112-114 High Street, Rickmansworth, Herts. WD3 1AQ.
85-87 Jermyn Street, London SW1Y 6JD. 01-839 6094

MEMBER OF THE COMPUTING SERVICES ASSOCIATION • AUTHORISED DISTRIBUTOR OF NCR COMPUTERS
CP/M MS-DOS UNIX DPS IMOS IRX ITX VRX
IFS IDCS IMCS ITAS IGMS SCOLAR PRINTMAN
DMV TOWER 8100 8200 9010 9020 9040 9300

The transmission of office documents at an international level infers that a wide variety of languages has to be considered. Character repertoires for this purpose are the subject of a draft standard about to be published by the International Organisation for Standardisation (ISO) where the basic 26 letters of the Latin alphabet are enhanced to cater for 41 languages.

On these two pages the standard is discussed by Joan M. Smith, senior consultant, Standards Division, National Computing Centre, in the context of the interchange of documents.

A standard to satisfy 41 languages

HOW much do you know about standards in text processing? Not a lot? My own feeling is that those who stand to benefit most know all too little.

I am unconcerned how and why this state of affairs came about: what does concern me is that it should not persist.

Text processing is a rapidly expanding area. The odds are that there are several word processors in any company office right now, and that when the remaining old-fashioned typewriters go to the scrapyard they will be replaced by yet more of these new-fangled word processors, some terminals even, and perhaps a printer or two.

Let us make sure that they can communicate text with those in the outside world. It may be all well and good to do your own thing on a typewriter, but I happen to be interested in the intercommunication of information via devices that succeed them — and so is the International Organisation for Standardisation (ISO).

The responsibility for standards within ISO in computers and information processing comes under the aegis of technical committee 97, of which there are several subcommittees. The one about which I wish to write is SC2, this being the one that deals with character sets and coding. Its members are drawn from countries scattered around the world, all representing their respective national standards institution; for example BSI in the case of this country.

> **When the remaining old-fashioned typewriters go to the scrapyard they will by yet more of these new-fangled word processors**

Their work could well be as relevant to you as that of those who decided in the first instance that there would be 26 letters in the English alphabet, and that they were a,b,c, . . . z.

It is rather handy to think of there being just 26 letters. Computer manufacturers certainly liked it that way and declared them all capitals — until users convinced them that the art of calligraphy should not die, and they therefore provided small ones too.

Then people in different countries started to write to one another more and more — not just pen-friends, but people in offices. They did business with one another; they were members of the same committee; they sat around the same conference table; they exchanged information. Only now we were reminded all too frequently about such things as accents.

So a situation was arising where inter-communication of text was required among countries where the natural language was based on the Latin alphabet, and technology was pushing ahead and making it possible. All that had to be done was to get the word processors and terminals talking to each other.

It would be quite wrong to think that the experts who make up the technical committee for computers and information processing in ISO had been sitting back resting on their laurels since the publication in 1973 of ISO 646 7-bit Coded Character Set for Information Processing Interchange, the first international standard specifically for computers. Far from it.

ISO/TC 97/SC 2 has been preparing for international interworking as has the CCITT. (International Telegraph and Telephone Consultative Committee) and like bodies. They had taken other measures too in the intervening period, but since these were based on 7-bit coding there were limitations.

Let us not dwell on those but look slightly ahead to the impending publication of ISO 6937, parts 1 and 2 duly approved and in the publishing pipeline.

What shall we have? ISO 6937 deals with Coded Character Sets for Information Interchange, part 1 being the general introduction and part 2 Latin Alphabetic and Non-alphabetic Graphic Characters, the two parts to be used in conjunction with each other.

Part 3, Control Functions for Page-Image Format, has been released as a draft international standard for comment and will be published in due course; this part has particular relevance to teletex page-image format.

Other parts may well be added later to cater for text-processable format or devices with other imaging requirements.

Part 2 allows for multilingual work of languages based on the Latin alphabet. Specific provision has been made for 39 European languages (Albanian, Basque, Bretoo, Catalan, Croat, Czech, Danish, Dutch, English, Estonian, Faroese, Finnish, French, Frisian, Galician, German, Greenlandic, Hungarian, Icelandic, Irish, Italian, Lapp, Latvian, Lithuanian, Maltese, Norwegian, Occitan, Polish, Portuguese, Rhaeto-Romanic, Romanian, Scots Gaelic, Slovak, Slovene, Sorbian, Spanish, Swedish, Turkish and Welsh), Afrikaans and Esperanto.

No less than 234 graphic representations are employed to give unique coding to the necessary characters. There are 22 just based on a: small a, capital A, small á with acute accent, capital Á with acute accent, small à with grave accent, capital À with grave accent, small â with circumflex accent, capital Â with circumflex accent, small ä with diaeresis or umlaut mark, capital Ä with diaeresis or umlaut mark, small ã with tilde, capital Ã with tilde, small ă with breve, capital Ă with breve, small å with ring, capital Å with ring, small ā with macron, capital Ā with macron, small ą with ogonek, capital Ą with ogonek, small ae diphthong, capital AE diphthong.

Examining the complex table of usage by country can be a salutary experience for Britishers whose needs are rather more simple.

To achieve representation of many of these characters, non-spacing diacritics are used in conjunction with letters which are sent as pairs (accent plus letter). The 13 non-spacing diacritics are acute, grave and circumflex accents, diaeresis or umlaut, tilde, caron, breve, double acute accent, ring, dot above, macron, cedilla and ogonek.

Other seemingly composite characters, for example d with bar, l with middle dot, l with stroke, o with slash, have been accorded a single graphic character.

The code table also provides for appropriate punctuation marks including the inverted exclamation and question marks and angle quotation marks. There is a variety of signs including those for section and pilcrow, copyright and registered signs; there are several currency signs and some for scientific applications.

Both 7-bit and 8-bit working is provided for, 8-bit to be preferred these days. And if you want to see the difference the bit makes, just look at the code table of graphic characters. Not by chance we find that the graphic character set specified 10 years ago in ISO 646 7-bit Coded Character Set for Information Processing Interchange occupies 2/1 to 7/14 as before, the new graphic characters occupying 10/1 to 15/14, positions made available by the 8th bit as it were.

Spelling it out the full set of the former becomes the primary set of the latter (and A, for example, is still represented as 4/1 but 01000001 instead of 1000001), the additional bit allowing for the supplementary set (where AE diphthong, for example, is represented as 14/1 or 11100001).

In 1979 ISO had published 4873 Information Processing — 8-bit Coded Character Set for Information Interchange, but no specific graphic characters had been designated in 10/1 to 15/14.

For 7-bit working as per ISO 6937, the supplementary set is represented by 2/1 to 7/14 which may also be used for 8-bit working instead of 10/1 to 15/14. The supplementary set would need to be invoked explicitly since 2/1 to 7/14 are normally used for the primary set, the less sophisticated one. Note that the characters within the primary set may not be used in combination with each other to produce composite characters; diacritical marks in this set are all spacing characters.

> **A situation was arising where inter-communication of text was required among countries where the natural language was based on the Latin alphabet, and technology was pushing ahead and making it possible.**

Part 3 of the standard deals with control functions for page-image format, that is as presented by the sender with the intention of there being no reformatting by the receiver. The text stream therefore includes such format effectors and other control functions as may be necessary to achieve this. These may specify the size and orientation of a page, the text area of the page, the rendition criteria for the characters themselves, for example the font used, its style, the intensity, the size of the character, also inter-line spacing.

The primary set of control functions is specified in 0/0 to 1/15, the elementary control function the supplementary set in 4/0 5/15 or 8/0 to 9/15 of an 8-bit

Additionally, there are para terised control functions of the supplementary set in column and 6. The supplementary set elementary and parameter control functions is in fact a sub of the repertoire defined in I 6429 Additional Control Functions for Character-Imaging Devices.

> **It is rather handy to think of there being just 26 letters. Computer manufacturers certainly liked it that way**

So we shall be all set for tele n'est ce pas?

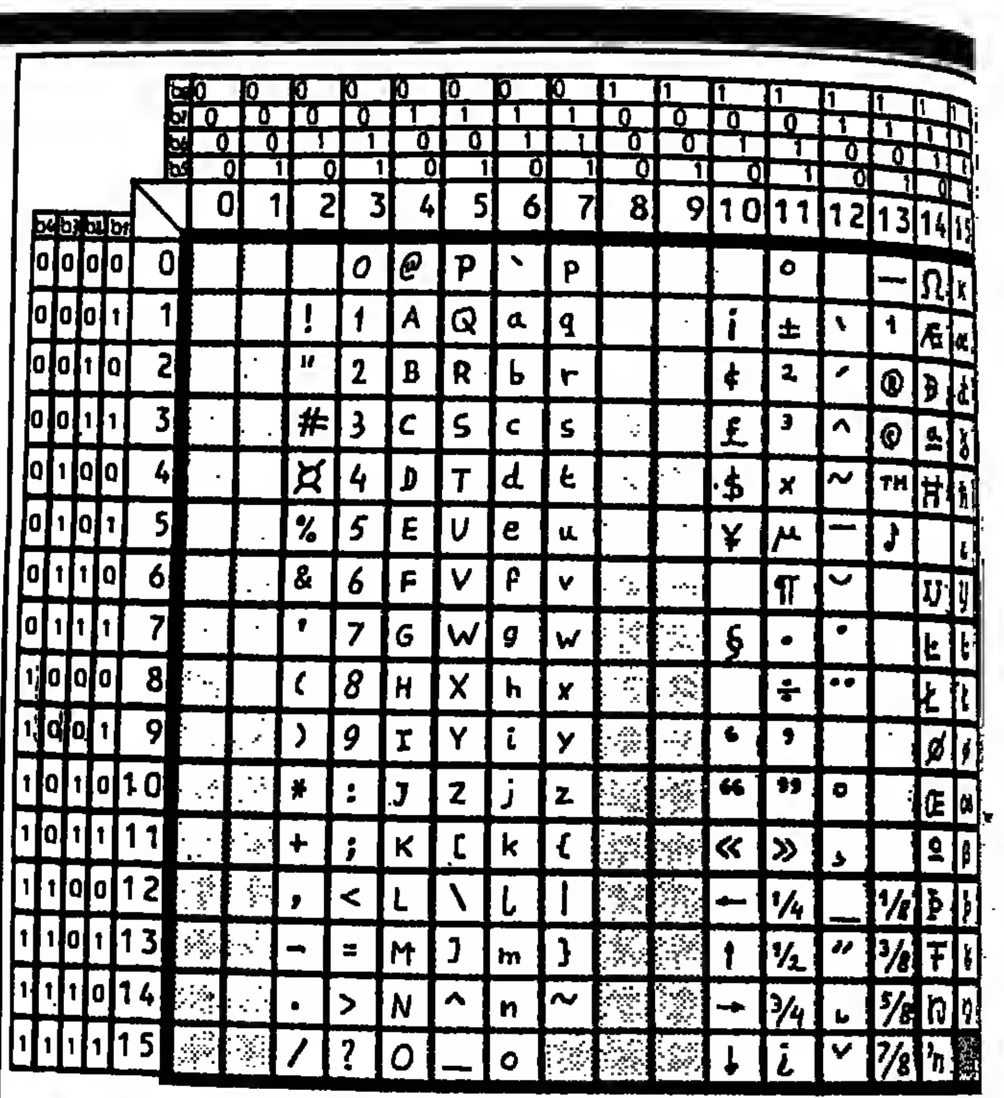
But have you needs not cove by the foregoing? Do not desp for there is provision for extensions. Other graphic characters or character sets may be signated, also control chara all being invoked by means functions or escape se accordance with ISO 2022 standard has recently dated, the new title being tion Processing — ISO 7- bit Coded Character Sets Extension Techniques.

Character sets may be (and many have been) in ance with the procedure in ISO 2375 Procedure for tration of Escape Seque too being within the ISO/TC 97/SC 2. So if quirements are for ra than those 41 languages Russian, Japanese, the alphabet, say — have no

But that is another more of that anon. It is now to say: do not de own coding scheme for any ment, however complex quirements may be, with checking that someone somewhere, has not you the effort. And if submit yours for

Coupled with the above, are provided for registering pertoires of graphic document dealing with ISO DIS 7350 Text Co tion — Registration of Character Sub-repertoires, draft international standard.

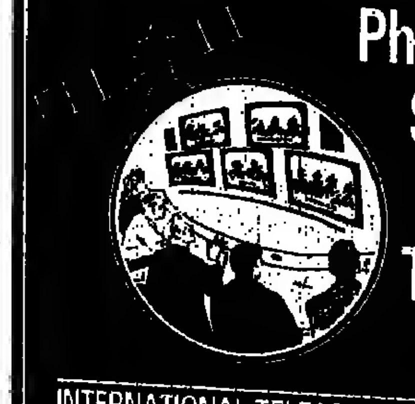
■ Continued on page 25



				b8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
				b7	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
				b6	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
				b5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
b4	b3	b2	b1		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	0	0	0	0				0	@	P	`	p				°		―	Ω	κ
0	0	0	1	1			!	1	A	Q	a	q			¡	±	`	¹	Æ	æ
0	0	1	0	2			"	2	B	R	b	r			¢	²	´	®	Đ	đ
0	0	1	1	3			#	3	C	S	c	s			£	³	^	©	ª	ð
0	1	0	0	4			¤	4	D	T	d	t			$	×	~	™	Ħ	ħ
0	1	0	1	5			%	5	E	U	e	u			¥	µ	¯	♪		ı
0	1	1	0	6			&	6	F	V	f	v	▨	▨		¶	˘		Ĳ	ĳ
0	1	1	1	7			'	7	G	W	g	w	▨	▨	§	·	˙		Ŀ	ŀ
1	0	0	0	8	▨	▨	(	8	H	X	h	x	▨	▨		÷	¨		Ł	ł
1	0	0	1	9	▨	▨	)	9	I	Y	i	y	▨	▨	‘	’			Ø	ø
1	0	1	0	10	▨	▨	*	:	J	Z	j	z	▨	▨	“	”	˚		Œ	œ
1	0	1	1	11	▨	▨	+	;	K	[	k	{	▨	▨	«	»	¸		º	ß
1	1	0	0	12	▨	▨	,	<	L	\	l	|	▨	▨	←	¼	_	⅛	Þ	þ
1	1	0	1	13	▨	▨	-	=	M	]	m	}	▨	▨	↑	½	˝	⅜	Ŧ	ŧ
1	1	1	0	14	▨	▨	.	>	N	^	n	~	▨	▨	→	¾	˛	⅝	Ŋ	ŋ
1	1	1	1	15	▨	▨	/	?	O	_	o	▨	▨	▨	↓	¿	ˇ	⅞	ŉ	▨

The about-to-be-published ISO 6937 primary and supplementary sets of graphic characters.

LONDON.. linked with
Philadelphia
Sydney
Tokyo
Toronto



INTERNATIONAL TELECONFERENCE SYMPOSIUM
"The largest live teleconference yet held"
The Royal Lancaster Hotel, London 3rd to 5th April 1984

How will teleconferencing affect your organisation?
Will it save you executive time and money?
Will it improve your decision making?

Details of International Teleconference Symposium from
Conference Clearway Limited
9 Pavilion Parade
Brighton BN2 1RA
Telephone (0273) 695079/695811

The International Teleconference Symposium is hosted in London by British Telecom International

A criterion for future procurement

■ From page 24

repertoires of that specified in ISO 6937 may be defined to allow for an output device with a changeable printing element, for example. Typically, these may be associated with different countries for representation of their natural language. Again, a register is to be maintained.

Everything possible is being done to promote capability.

It is important to remember that this standard applies to the communication of text where this can be by public or private networks or by interchange media such as magnetic tapes or discs; it relates to the character representation at the coding interface and not as displayed or otherwise previously or subsequently represented. There are obvious implications, however, concerning the original encoding and display of the graphical characters, all 234 being able to be printed by a daisywheel having 128 petals, apart from their potential display on a graphics terminal.

I admit to being a wholehearted supporter of the full repertoire, not only all along the line but also as displayed. I happen to think it discourteous to print names and addresses of colleagues in European countries devoid of their rightful diacritics. But inevitably there will be more simple devices unable to cope with all the graphical characters. In such cases the receiving device is to respond as meaningfully as it can, fallback techniques to be employed where necessary.

With this in mind there is the registration of sub-repertoires. The minimum sub-repertoire includes the 26 unaccented letters, capital and small, the 10 decimal digits, several signs and punctuation marks, also formatting characters. Various other restrictions are necessarily imposed on the design of sub-repertoires, an obvious one being that no character shall be included that is not defined in the standard.

Others are that two or more graphic characters of the repertoire may not be included as a single character, thus guarding against the assignment of "new" meanings; two names assigned to a single character in the sub-repertoire shall not be used for two separate characters, for example minus sign or hyphen, with the added implication of word separation.

These rules make the task of employing fallback techniques comparatively straightforward. Useful advice is given in Annex E of part 2 of ISO 6937 on this, although it cannot be regarded as part of the standard.

Care should be taken if substituting two separate characters for a diphthong, say, lest the increase in the printed line length causes the defined printed area to be exceeded. Where accents are concerned approximations may be used.

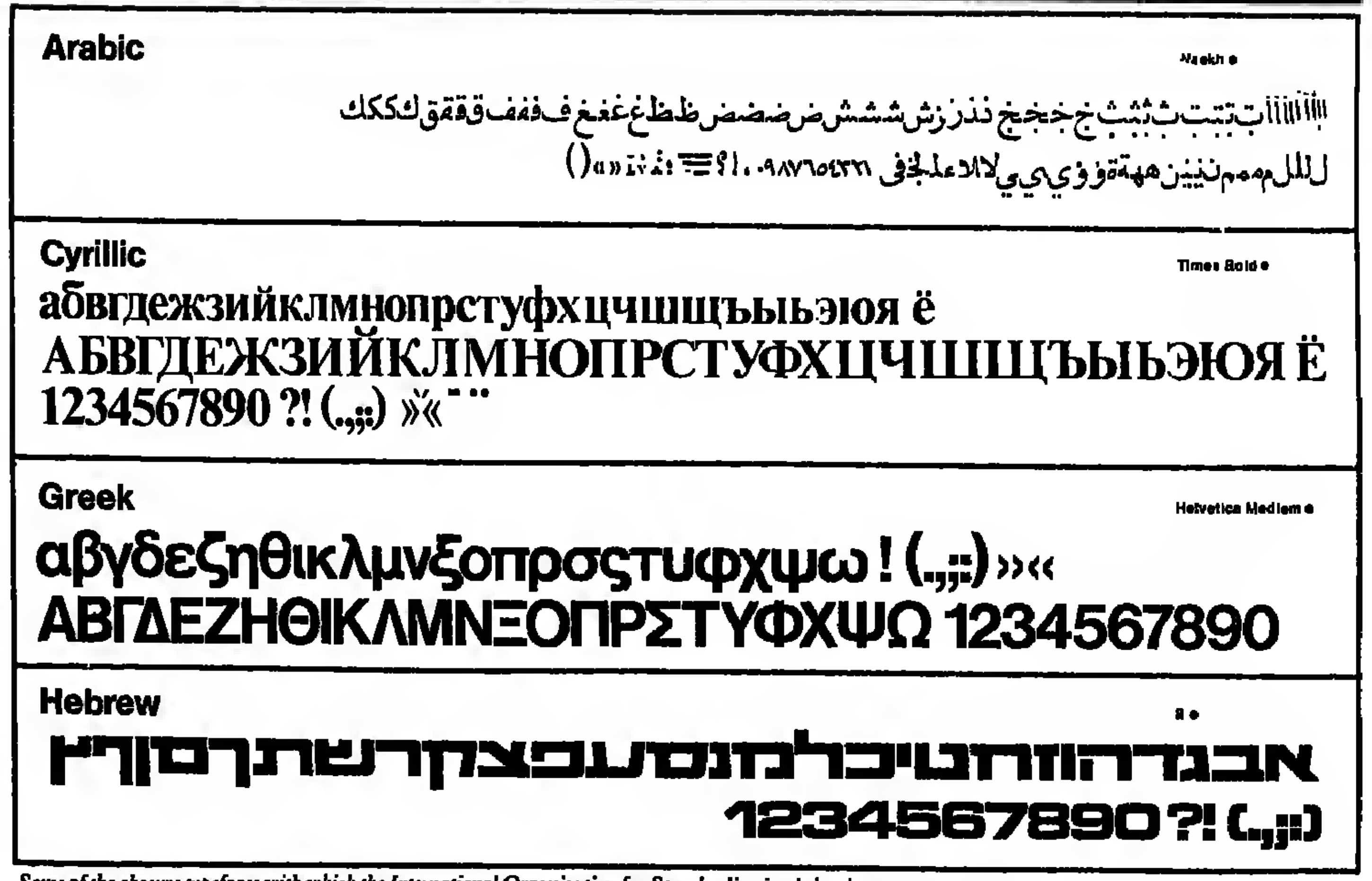
ISO/TC 97/SC 2 has done its job, and, in my opinion, has done a good job. ISO 6937 is a good standard, but the document will be of little value if it is not applied. So we can expect manufacturers to rub their hands with glee and to follow all its points assiduously when designing and manufacturing future equipment, and we can expect their respective salesmen to tell us that this latest piece of equipment conforms to ISO 6937, the full character set and all. Can we?

I see terminals being made to conform with many of the provisions of ISO 6937 if only because the teletex code, in the main, is identical to that defined by ISO.

Do not, however, immediately take the first system with bells and whistles that you are offered by your friendly neighbourhood salesman, even if he offers you 50% discount if you will take 100. They may be fine, or you could end up ringing bells and blowing whistles nobody else can hear.

Seriously, make compliance with ISO 6937 one of the criteria in your procurement policy.

■ The NCC has published a book on the subject of character sets and coding in its series Guides to Computing Standards, No. 9 being *Character Sets and Coding* by H. McG. Ross (1981). Copies are obtainable at £5.50 (cash with order for single copies) from the NCC Standardisation Office, The National Computing Centre Limited, Oxford Road, Manchester M1 7ED. For a copy of ISO 6937, Coded Character Sets for Text Communication, or other standard documents to which I referred apply to the British Standards Institution, Linford Wood, Milton Keynes MK14 6LE.


Arabic
Naskh
Cyrillic
Times Bold
абвгдежзийклмнопрстуфхцчшщъыьэюя ё
АБВГДЕЖЗИЙКЛМНОПРСТУФХЦЧШЩЪЫЬЭЮЯ Ё
1234567890 ?! (.,;:) »«
Greek
Helvetica Medium
αβγδεζηθικλμνξοπροςτυφχψω ! (.,;:) »«
ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ 1234567890
Hebrew
אבגדהוזחטיכלמנסעפצקרשתךםןףץ
1234567890 ?! (.,;:)

Some of the obscure typefaces with which the International Organisation for Standardisation is having to come to terms.

All 234 characters can be printed by a daisywheel with 128 petals.

THE ULTIMATE hyper-accelerated totally compatible fully interactive multi-dimensional voice activated system.
DUAL PORT MEMORY
INSTANT HEADACHE RELIEF
DEBUGGING AEROSOL SPRAY
SYSTEMS ARCHITECTURE

Does packaged software live up to its promises?

For the DP manager having to handle personnel, payroll and pension administration schemes, packaged software is obviously an attractive option.

But how often is it the right one?

Most "off-the-shelf" software is just that. And in areas as specialised and complex as pensions administration, off-the-shelf generally means off the mark.

There is, however, an alternative for IBM mainframe users to the time consuming and costly business of writing your own software for those tasks.

Unipersonnel, Unipay and Unipension from Peterborough Software are unashamedly software packages.

But software packages with a difference.

They combine more than twenty years experience in human resource software with a high degree of specialist user expertise.

So you could say each product has been designed by experts, for experts.

They are all quickly and easily installed, and are designed to fit into your DP environment with the minimum of hassles. They're adaptable to each user's precise needs. So your personnel, payroll and pension colleagues get what they need, when they need it, in the form they need it.

Legislative changes are automatically taken care of. So, for example, an equalisation of male and female retirement changes would present you with no problems at all.

Unipersonnel, Unipay and Unipension are all user-controlled systems, so your own involvement is kept to a minimum.

They combine ease of operation with ready access, yet with a high degree of security.

And perhaps most importantly of all, all three products include an element of software that very few of its would-be rivals are able to offer.

This unique ingredient? People.

Our development departments, with software engineers and designers, keeping us - and our customers - constantly one step ahead.

Our helpful sales teams. Our education staff, making sure that you and your colleagues can make the most of your system.

And, to minimise operational problems, a Customer Support team only a phone call away.

So if you're interested in hearing about performance rather than promises, just complete the coupon or telephone Jane Lewis on (0733) 41010.

Please tell me more about Unipersonnel ☐
Unipay ☐ Unipension ☐
Name
Position
Company
Address
Telephone
Mainframe Type/Model

Send to
Peterborough Software,
Borough House,
Newark Road,
Peterborough PE1 5YJ.
CW2

PETERBOROUGH SOFTWARE
Our software makes sense of your hardware

"Just the ticket for increased sales"

Complete and present this form at the Show for entry

Stand no. 170

VISITOR
REGISTRATION FORM

Name ______________________
Job Title ______________________
Company ______________________
Address ______________________
____

Nature of business (tick one box only please)

- ☐ Computer/WP retailer
- ☐ Computer/WP dealer
- ☐ Computer/WP distributor
- ☐ Independent sales organisation
- ☐ Computer OEM
- ☐ Other OEM
- ☐ Consultant
- ☐ Office systems dealer
- ☐ Systems house/ integrator
- ☐ Other (please state) ....

Job Function

- ☐ Management
- ☐ Marketing/Sales
- ☐ Service
- ☐ Software development
- ☐ Engineering
- ☐ Consultant
- ☐ Other (please state) ....

Main area of interest: ....

Computer related advertising material may be sent to you as a result of filling in this card. If you do not wish to be included on any other mailing list please tick box ☐

* For additional tickets please state figure here ....

Please send a covering letter stating name, job title, company and address of ticket recipients.

Return to: The Exhibition Manager, The Computer Trade Show,
Reed Exhibitions, Surrey House, 1 Throwley Way, Sutton, Surrey SM1 4QO.

Wembley Conference Centre, March 13-15 1984
Open 09.30-17.00 daily

In a fast changing market like computers you need to see the very latest hardware and software developments if you're going to be able to offer your customers the most up to date systems.

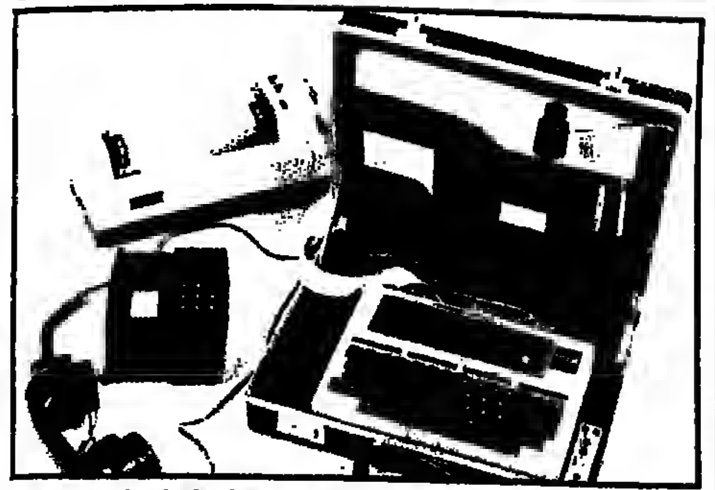
For keeping up with developments The Computer Trade Show is just the ticket – so to help you attend this exclusive trade only show we have printed the visitor registration form here. Simply fill it in and bring it with you to Wembley Conference Centre when The Computer Trade Show is on from March 13 to 15 and you will be admitted free.

If you want tickets for your colleagues or other bona fide visitors return the*form to Exhibition Manager and tickets will be forwarded to you immediately.

Because the show is for the trade only you can expect a warm welcome from all the exhibitors who will be only to eager to discuss trade prices, distribution agreements, licensing agreements and so on. You can see many different suppliers all in one day, and have the kind of discussions which would normally require several formal appointments. You owe it to yourself and your clients to keep up to date so let The Computer Trade Show be your ticket to increased sales.

The Computer Trade Show '84

PRODUCTS



The Mark 3 Mini-telex from Direct Data Entry.

New light on terminal in a briefcase

A PORTABLE terminal based on Tandy's Model 100 computer has been launched by Direct Data Entry. It is called the Mark 3 Mini-telex.

The company has modified the computer to make it suitable for self-contained business use. It has added a high-capacity power pack and designed new charging circuits to accommodate mains or 12-volt DC input. A 300-baud full duplex acoustic coupler, driven by the same power pack, has also been added. And a meter is provided to show the user the state of the power pack.

The acoustic coupler is designed to accept almost any shape of telephone, including Trimphones.

The equipment is all contained in a robust briefcase weighing 12-lb. An extra touch is a light in the lid to help business people on the road use the machine in telephone boxes.

Direct Data Entry (CW), Dower House, Green Balk Lane, Lepton, Huddersfield HD8 0EW. Tel: (0484) 606090.

Floppy will triple 5¼in capacity

MPI Europe has announced a new 5¼in floppy disc drive which, it says, provides triple the capacity of current 96 tracks-per-inch (tpi) drives.

Called the MegaDrive, the Model 1722 employs 170 tpi track packing density to realise an unformatted capacity of 3.2 Mbytes on a 5¼in diskette.

The Model 1722 has a standard 5¼in footprint and is plug-compatible with current 8in floppy controllers with an SA 850 interface. This means it can be used with existing hardware and the enhanced capacity suits it to program loading and Winchester back-up applications.

A further bonus, says MPI, is that the Model 1722 is capable of reading standard format 48 and 96 tpi diskettes.

Evaluation units are available for volume OEM customers and priced at $500.

MPI Europe (CW), 11a Reading Road, Pangbourne, Berks RG8 7LR. Tel: (07357) 4711.

The TM120 which consists of keyboard, telephone and printer in one unit.

Systems with built-in telephone

AN electronic mail terminal with a built-in telephone and costing £635 is now offered by BCD Telemail.

The TM120 consists of a keyboard, a telephone and a printer, plus a built-in modem, in one unit.

As a terminal the device can access the telex network and electronic mail services. The printer can be switched between 40-column, 60-column and 80-column lines.

The telephone part of the terminal can store 10 numbers for short-code automatic dialling and provide recall of the last number called.

BCD Telemail (CW), Durgates House, Wadhurst, East Sussex TN5 6DF. Tel: (0892) 883755.

Cuts at the touch of a button

THE Fairblade continuous stationery guillotine from Wightman Mountain, priced at less than £2,000, has been designed to cut continuous computer or word processor stationery neatly and cleanly on all four sides.

All unsightly perforations are removed so that letters produced on a word processor in continuous form, for example, become indistinguishable from a letter individually typed on a company's letterheading.

The versatility of the guillotine is such that it can be used to cut almost any form of continuous stationery output up to 15½in x 16½in including multi-part sets up to three parts.

The cutting size can be adjusted down to 3in x 4in and all adjustments are in ⅙in increments.

The Fairblade, says Wightman Mountain, takes about two minutes to set up and one sheet only can be cut initially to check that the correct size has been selected. Then, at the touch of a button, the guillotine will automatically cut every successive sheet correctly and switch itself off when the last sheet has passed through.

The Fairblade guillotine.

It comes complete with its own stand and waste bin and swivel castors enable it to be moved from one location to another.

Wightman Mountain (CW), 142 Vauxhall Street, London SE11 5RH. Tel: 01-582 6522.

The PT88i which runs at 150 characters a second.

Printer of character

THE Siemens PT88i ink-jet printer has been adapted to reproduce all the characters produced by the IBM Personal Computer. The work was done by UK printer and terminal distributor Riva Terminals, which is also a Personal Computer dealer.

The PT88i costs £595. It runs at 150 characters a second and ink-jet printing ensures quiet operation.

The ink cartridge prints five million characters, and a signal tells the operator when the ink is getting low.

Both friction and tractor paper feeds are standard. The printer can handle roll and fan-fold paper and single sheets.

Riva is aiming the product at both dealers and users.

Riva Terminals (CW), 9 Woking Business Park, Albert Drive, Woking, Surrey. Tel: (04862) 71001.

b.1815 | b.1984

ADA
Daughter of Lord Byron

Augusta Ada Byron, patron and assistant to Charles Babbage, inventor of the mechanical analytical machine, was the world's pioneer programmer.

Systems Designers announces the availability of full Ada for VAX VMS

To ANSI MIL STD 1815A

Full language specification based on sound compiler construction techniques

Easy to rehost

Easy to retarget: M68000 and 8086 currently under development

Perspective Programming Support Environment in early '85

For more information:-
[illegible]

Systems Designers

MARKET PLACE

From this...

...to this! 20MB to 87MB for £6190! Ex-works exc. VAT

SK
Computer
Systems
Limited

If this is your system then this is your expansion! Retain your existing equipment and add-on SK's new 67MB Winchester Disk Drive to increase your number of users and solve your storage problems in record time!
FEATURES: 'Only 5¼" High 'RM03/2 Emulation 67MB (Suits RSX or RSTS) 'Unibus or Q-Bus 'Faster Response 'Allows more users. (RT11 System also available, price on application).

SK Computer Systems Ltd, St. Michaels Hse,
Norton Way Sth, Letchworth, Herts SG6 1PB.
Tel: Letchworth (04626) 79331. Tlx: 825647.

SK NORTH OF THE BORDER!
SK ARE COMING TO SCOTLAND

SK Computer Systems will shortly be opening a new branch in Falkirk to service and maintain DEC* based and compatible equipment. We offer contract maintenance, system build and repair facilities for DEC, System Industries, CDC, Emulex, Dataram, Digidata and many others.

STOP PRESS! Contact SK Computer Systems NOW for further details!
PHONE: Letchworth (04626) 79331/79461.

SK Computer Systems Ltd, St. Michaels Hse, Norton Way Sth, Letchworth, Herts SG6 1PB. *DEC is a trademark of Digital Equipment Co. Ltd.

SK
Computer
Systems
Limited

The Power of the 11/73. The Capability of Zeta.

Obtain Unibus power at Q-bus prices with DEC's* new 11/73* processor.

Based on the revolutionary MICRO/J11* chip, which combines a 32 BIT internal data path, an 8KB cache and the FP11 floating point instruction set to provide a performance that exceeds the PDP 11/70*, this processor supports full 22 BIT addressing and addresses up to 4MB of memory.

If you are looking for more processing power this is the product you have been waiting for.

Let Zeta Systems help you to unlock the power of the 11/73*.

Whether you wish to upgrade an existing system or install a new one we can offer a wide range of proven solutions that will run all existing software.

As experienced system builders we only utilise high quality reliable components to ensure that you get a better product. All our products are fully supported throughout the U.K.

For expertise and quality solutions call Zeta Systems today.

*are trademarks of Digital Equipment Company

44-46 Baldwin Street, Bristol BS1 1SE Tel: (0272) 277229

ZETA

THE TOTAL SERVICE CONCEPT FOR DEC BASED SYSTEMS —

FIELD SERVICE
sensible prices (LSI to VAX 11/744 apx. for £195/month).

CIRCUIT BOARD REPAIR
using our in-house automatic test equipment (MS11-LD memory £180).

OVERHAUL SERVICES
for complete systems, CDC disk drives, terminals and printers at our extensive factory.

COMPLETE SYSTEMS
your next system designed, supplied, built and installed.

Lambart COMPUTER ENGINEERING
([illegible]) 27074/5
ONE OF THE LAMBART GROUP

All makes of Computers and Peripherals bought and sold

FOR SALE
DEC 11/23 192K, 2 DLV11J, 8MB F + 8MB R
IBM 3101-22 VDU, 5120-632, Series 1
ICL 1900, 2872, Logabax 4650
NCR 8250, Olivetti S6000
Philips 4500, P430
Bell Black Box
Sperry Univac BC7, 90/6 1.5MB
Systime 5000, Tektronix 4014

WANTED
Burroughs B920
Data 100 Key to Tape System
DEC 11/70, VAX, 2050
IBM 5225, 5256, 5251-012
ICL ME29-45, LP350, M730, DRS20
Philips P142, P342/3/5, 6003, 6004
Rank Xerox 850/860
[illegible]

E O B LIMITED
Telephone 0783 [illegible]
Telex: 537783

Special deals for software houses

DATATRIEVE · FMS · TDMS · BASIC · PASCAL · FORTRAN · COBOL · MACRO 32 · PROFESSIONAL TOOL KIT

VAX time for sale

Hardware rental.
Full communications.
Free walk-in terminal service.

RING TRICIA CARROLL NOW ON 01 278-4595 OR 0784-37411

Allen Computers International, Allen House, 40-48 Bernard Street, London WC1N 1LE. A member of the Air Call group

ALLEN COMPUTERS INTERNATIONAL

DESK TOP TRANSFER SWITCH UNITS

CENTRONICS 2 Way £110

RS232 2 Way £85

Up to 6 Way Switches available together with Cables for all types of Printers and Disk Drives

VAS Computer Parts & Accessories Limited
5 Pilton Estate, Pitlake Croydon CR0 3RY
Telephone: 01-681 8861 (6 lines)
Telex: 896559

NCS Ltd

Head Office·RAWTENSTALL
GLASGOW·BIRMINGHAM
LONDON

The Leading Independent
FORMS HANDLING COMPANY
MAINTENANCE and SALES

Why NCS?

NEW
BURSTERS
DECOLLATORS
GUILLOTINES
SHREDDERS
FIRE SAFES

*We employ our own fully trained engineers throughout the UK supporting over 300 sites.
*Our engineers will support your machines to the same level as your computer.
*Our engineers are available by contract or by time and parts.
*We have showroom facilities where your individual needs will be catered for.
*We stock a large range of refurbished machines.

Contact BRIAN SHANKS for further information
tel: **0706 229125** Head Office telex: 635815
01-935 8550 London Office
NELSON COMPUTER SERVICES St. John's Court
Bacup Road, Rawtenstall, Lancashire. BB4 7PA.

NDR8850 SERIAL DOT MATRIX LINE PRINTER

Unique, fast combining the flexibility of a matrix printer at line printer speeds.

- [illegible] including ASCII, UK, USA, German, [illegible] Danish, Norwegian.
- 96 character downline load capability.
- Customer programmable EPROM area.
- Optimisation control for maximum throughput.
- A host of operator controllable functions selected via a membrane touch panel.
- Choice of interfaces including RS 232/20mA current loop.
- Unique 12 month warranty package.

Systek for a wide range of Newbury Data printers.
Every printer as good as the complete service.

Systek 01-349 2911
Systek Ltd., HR House, 447 High Road, North Finchley, London N12 0AZ. Telex: 8952836.

PLACE MARKET

tubs COMPUTER STORES

PROCESSORS	
KDF11-AC 11/23	850
PDP11 34/A	3,200
PDP11/23	
Dual Floppy Store	4,600
PDP11/40 & 45	from 000
VAX 11/780/750	call
DISC DRIVES	
RL02 AK	1,050
RXV11	850
RXV211 Dual Floppy	1,750
RM02/3	from 5,060
RA60/RM05	call
RP06	7,800
ADD-ONS	
DZ11-A F	from 880
DH11 Series	from 2,800
DU11-DA	486
DUV11 DA	320
DPV11 DA	180
FP11 A	1,100
DLV11-E	150
DLV11-J	360
TERMINALS & PRINTERS	
VT50	160
VT101	018
CIT101	Qty Related call
LA36	276
LA120	from 1,850
LP25 300/600 lpm	from 4,400
EXPANSION HARDWARE	
Cabinets	from 150
DD11 4 & 9 slot	from 260
BA11 MF	600
BA11-NF	660
MEMORY	
MSV11 BD	170
MSV11 PK	760
MS11 LB and 10	from 760
MS11 MB	663
MAGNETIC TAPES	
TS03 + Control	780
TE16 Slave	4,600
TE10 + TM03 Formatter	0,000

WANTED DEC HARDWARE

TUBS Computer Stores Ltd, 30 New Walk, Leicester LE1 6TW. Telex Bureau 342163 (Insure G).

Leicester (0533) 551410.

Data General equipment for sale.

E6169 D211 VDU
B6108/9 D200 VDU
E6130 D400 VDU
B6053 D2 VDU
6225 15Mb Winch + QF S/S
6222 15Mb Winch + QF S/S
B6095 5 + 5Mb Disk S/S
B6070 10 + 10Mb Disk S/S
B6067 50Mb Pack S/S
6067-A 50Mb Pack S/S
6234 50Mb Add-on S/S
6040/1 Dasher TP1
6021/6 Single/Dual Mode MTU
Comms Chassis ALMs ATIs
Nova 3 Systems + Memories
Nova 4 Systems + Memories
Cipher Tape Micro Streamer
B4327 300 lpm Printer S/S
147Mb 8" Fujitsu Winchester

Telephone Stephen Page 0636 707909 or Telex 56428

BUCCANEER
Buccaneer Systems Limited
Brunel Drive, Newark.
Notts NG24 2EG

'P.C. phone home!'

(with a TRANSDATA ACOUSTIC COUPLER)

METRIC SYSTEMS LIMITED
(Sole U.K. Distributor)
Joule House, 61 James Road
Fleet, Hampshire GU13 9GH
Tel: Fleet (02514) 28487

NEW, EX-DEMO, 2nd USER
GEM COMPUTER EQUIPMENT

Britain's Largest Independent Supplier of Forms Handling Equipment

★ BURSTERS ★
★ DECOLLATORS ★
★ GUILLOTINES ★
★ SHREDDERS ★

National deliveries and maintenance

Why GEM? Because we
★ Guarantee ★
★ Every ★
★ Machine ★

Phone for stock list
02572 71283

GEM Computer Equipment
Clarence Street, Chorley
PR7 2BJ

NEW & USED COMPUTER EQUIPMENT
BOUGHT AND SOLD

SAMPLE UNITS AVAILABLE
IBM 5288 MOD E15, 128K CPU, 3 - DD drives, etc, plus 2 - 5281 screens
IBM 3741/3742s - IBM 3717 PRINTERS
IBM 029/129 CARD PUNCHES + MAOs
IBM SYSTEM 23 - IBM 5110s/5120s
TEXAS INSTRUMENTS 911 VDTs + Cont.
UNIVAC BC7/800, 128K, 30 meg, printers, etc.

BRAND NEW EX-STOCK
DEC TS11-CB TAPE SYSTEM plus controller, in H9646 cab, inc. latest mandatory DEC upgrade.
DEC DZ11As, 8's-MS11-MB, etc.
USED TE16 TAPE with controller, 6ft cab, DEC gnteed maintenance.
Most systems available on request

New De Luxe 80 Column Hand Punches (Ex-Stock)

WDP SERVICES LTD
65 WIDMORE ROAD
BROMLEY
KENT BR1 3AA
01-464 9011
TELEX 896559

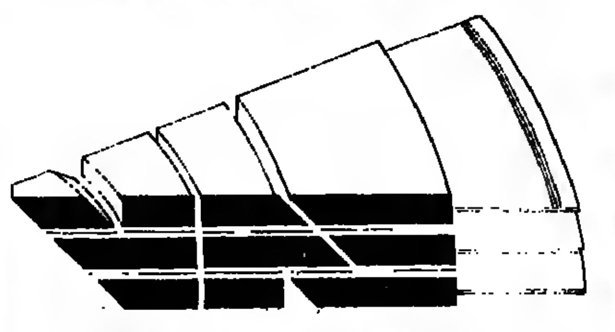
TEXAS INSTRUMENTS 911 VDTs COMPLETE WITH CONTROLLERS
EX-STOCK

WDP SERVICES LTD 01-464 9011

FOR MORE MARKETPLACE ADVERTISING
PLEASE TURN TO PAGE 30

ON-SITE MAINTENANCE FOR ALL OF YOUR REMOVABLE DISK MEDIA

A Preventative Maintenance to help avoid disaster and 'down-time in your computer room



★ A complete data surface analysis
★ All mechanical characteristics checked to manufacturers specifications
★ Safely and thoroughly cleaned on all surfaces
★ No loss of data
★ Repair service available
★ Complete range of new disk and tape media

Phone now for a free demonstration

VAS Computer Parts & Accessories Ltd.
5 Pilton Estate, Pitlake
Croydon CR0 3RY
01-681 8861 Telex: 896559

ELECTRONIC BROKERS
For Second User DEC Systems

PDP11/23AB	PDP11/34A	PDP11/45
128KB MOS	256KB	128KW CORE
DLV11J 4-line Interface	2 x RK07 Disk Drives	2 x RP04 Disk Drives
2 x RL01 Disk Drives	H960 Cabinet	H960 Cabinet
VT100 Console	VT100 Console	LA36 Console
Cabinet		
£7,500	£11,500	£11,250

DEC SALE
All items Reconditioned unless otherwise stated.

DISK DRIVES

RK07ED 28MB NEW	£2,500
RK07PD 28MB NEW	£2,500
RL01A 5MB	£895
RM03AD 67MB NEW	£6,250
RM80 124MB	£9,500
RPD6AB 176MB	£7,500

UNIBUS OPTIONS

AR11 A/D Conv.	£550
DB11A Bus Repeater	£250
DD11A/B Backplanes	£125
DD11CK Backplane	£275
DL11E Serial I/O	£385
DMC11AL I/P Link	£975
DMC11AR Network Link	£895
DMC11DA EIA Link	£575
DMC11MD I/Modem Link	£875
DMF32 Multiplexor	£2,750
DR11C Gen. Pur. I/O	£350
DR11K Digital I/O	£425
DR11W DMA I/F	£850
DU110A Synch. I/F	£195
DZ11D 20mA MUX	£995
FP11C Floating Point	£2,750
FP11E Floating Point	£1,800
KE11B Ex. Arith	£595
KE44A CIS	£995
KG11A CRC Option	£350
KJ11A Stack Limit	£75
KK11A Cache Memory	£1,600
KMC11A Aux. Proc.	£895
KT11C Memory Mgt.	£750
KT11D Memory Mgt.	£425
KW11L RT Clock	£75
KW11P Prog. Clock	£345
XY11 Plotter I/F	£275

PRINTERS

DEC LA34 30 cps	
DECwriter IV from	£425
LA35 30 cps RO DECwriter II with stand, 20mA I/F	£250
EIA I/F	£275
LA36 30 cps KSR DECwriter II with stand, 20mA I/F	£295
EIA I/F	£325
LA180PD 180 cps Matrix Printer with stand, parallel I/F	£495

WINTER '83/'84 CATALOGUE NOW OUT
Send for your Free copy now.

Add 15% to all Prices
Electronic Brokers Ltd., 61/65 Kings Cross Road,
London WC1X 9LN. Tel: 01-278 3461. Telex: 298694

CLWYD COUNTY COUNCIL TREASURER'S DEPARTMENT

SUPPLY OF MAGNETIC TAPE UNITS

Tenders are invited for the supply of one IBM 3240 Model 8 Magnetic Tape Drive, complete with feature 0425 (dual density 6250/1600 bpi).

This unit must be immediately available and in working order and be supplied with a valid IBM Maintenance Acceptance Qualification (MAQ) letter. Quotations inclusive of delivery and installation costs and specifying full details of unit including serial number should be sent in a plain envelope endorsed "Magnetic Tape Tender" to:–

County Treasurer, Shire Hall, Mold CH7 6NA to arrive no later than March 5, 1984
E. R. U. Davies, County Treasurer

Systek, a full range of ®Dec compatibles perfectly matched to your needs.

- High Speed Discs & Tapes
- High Performance Controllers, Interfaces & Multiplexors
- Advanced Terminals
- Versatile printers
- Applied Software
- Field Maintenance

Every bit as good as the complete service.

®Dec is the registered trade mark of Digital Equipment Co. Ltd.

CALL US NOW
Systek 01-349 2911
Systek Ltd., HR House, 447 High Road, North Finchley, London N12 0AZ. Telex: 8952836.

Computing Services Association

IBM PC
Nationwide Sales and Service

For further details, call:
Bob Reading on
04215 66321.

Quest International
Computer Services Ltd

quest
School Lane, Chandler's Ford, Hampshire SO5 3YY. Telephone (04215) 66321 Telex: 47426

PRODUCTS

Colour graphics subsystem introduced

The colour graphics system from Graphic Data Products

A COLOUR graphics subsystem for interactive, real time applications has been introduced by the Swiss company, Graphic Data Products.

The GDP-500 is basically an intelligent vector graphics system with an eight-colour raster display.

Image generation and transformations are performed on coded vector data stored in a display list. The image can be partitioned in individually addressable segments.

Images can be created in a virtual co-ordinate space of 4096x4096 points, with a real zoom facility to display the entire picture or a defined window on the 512x512 raster screen.

The GDP-500 is available with a 14in (33cm) or 20in (50cm) high resolution, flickerfree CRT.

A graphic tablet, mouse, plotter or hardcopy device can be connected through an intelligent peripheral interface, and an arithmetic processor accelerates complex transformations such as scaling and rotation.

The GDP-500 is accompanied by a Fortran IV graphic software package which enables the user to call a broad spectrum of graphic functions built into the terminal.

The GDP-500 is aimed at interactive, real time engineering applications such as CAD, layout design, schematics, simulation and network monitoring.

Specific modifications for system designers cam be made on request.

Graphic Data Products (CW), Columbia House, 69 Aldwych, London WC2B 4DY. Tel: 01-242 9267.

Disc system gives 20Mb online storage

NEW from the Micro Technology Group is the Honeycomb cartridge disc storage system for the IBM Personal Computer or XT.

Designed to match the PC's styling, the UK-developed Honeycomb gives 20 Mbytes of online storage, with full cartridge to cartridge back-up in less than five minutes. It can be increased to 40 Mbytes by daisy-chaining an expansion unit, and off-line capacity is unlimited.

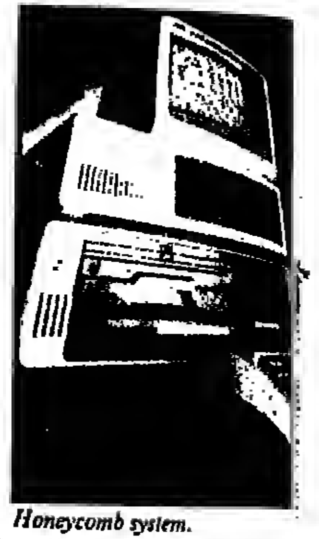
The system has two removable 10 Mbyte discs, housed in polycarbonate cartridges, constructed to protect recording faces.

The cartridges are so rugged that they can be dropped on to a hard surface without harming the enclosed discs.

"Spin-up speeds are under five seconds and there is an average of 35 milliseconds access time," says Peter Gardner, technical director.

The Honeycomb dual 10 Mbyte is priced at £3,750, with a single 10 Mbyte version at £2,800. Cartridges are £65 each.

The Micro Technology Group (CW), 51 The Pantiles, Tunbridge Wells, Kent TN2 5TE. Tel: (0892) 45433.



Honeycomb system.

MARKET PLACE

EQUIPMENT FOR SALE

2 x Mannesman Tally 2000 200 lpm Line Printers, both with interface and documentation.
1 x Partial set of RSTS/E Documentation VGC.
1 x Set of RSTS/E Documentation V7.1.
3 x Window Mounted Air-Conditioning Units. Ratings — 28000 BTU/HR; 24000 BTU/HR; 16000 BTU/HR.

Contact: Alan Ricketts on 01-377 8886

LINE PRINTERS
by
DATAPRODUCTS
from
ALVERONIC TECHNICAL PRODUCTS

Configured to all main manufacturers computer systems
National on site installation and support service

*** DEC SYSTEMS**

	Price excl VAT	Installation	Annual maintenance
LP32A *VAX 300 LPM printer + I/O	£4,654	£194	£996
LP32E *VAX 600 LPM printer + I/O	£6,106	£236	£1,200
LP320 *VAX 1000 LPM printer + I/O	£9,198	£250	£1,520
LP11-A *PDP 11/24/34/70 300 LPM printer + I/O	£5,399	£194	£996
LP11-E *PDP 11/24/34/70 600 LPM printer + I/O	£6,850	£236	£1,200
LP11-G *PDP 11/24/34/70 1000 LPM printer + I/O	£9,943	£250	£1,520
LPV11-A *LSI/11/03/23/23 + 300 LPM printer + I/O	£4,865	£194	£996
LPV11-E *LSI/11/03/23/23 + 600 LPM printer + I/O	£6,316	£236	£1,200
LPV11-G *LSI/11/03/23/23 + 1000 LPM printer + I/O	£9,409	£250	£1,520
LP25S RS232 serial interface + x on, x off, protocol for DZ11, DH11, DMF32, DLV11J, DZV11 — 300 LPM printer	£5,564	£194	£996
LP26S — 600 LPM printer	£7,015	£236	£1,200
LP27S — 1000 LPM printer	£10,108	£250	£1,520

*** DATA GEN/WANG SYSTEMS**

300 LPM band printer + I/O to DG/WANG configuration	£5,166	£194	£996
600 LPM band printer + I/O to DG/WANG configuration	£6,616	£236	£1,200
1000 LPM band printer + I/O to DG/WANG configuration	£9,707	£250	£1,520

*Registered Trade Marks

CALL TECHNICAL PRODUCTS DIVISION TODAY

ALVERONIC COMPUTER SYSTEMS

Technical Products Division, Alveronic House, Ryde Avenue, Hull HU5 1QQ. Tel: (0482) 445461. Telex: 52417 ALVCOM G

RS232 ADAPTERS

with Integral Printer Test and Line Test Facilities for Fungus/Systime/CDC Band Printers

Price: £620

Belgravium Ltd.
Unit E84
Ashley Lane
Shipley, Yorks.
0274-592632

WE PAY CASH
for any obsolete or redundant mainframe systems. For an immediate offer and further details phone:
Adam Barker
01-587 1604/6
DIXONIAN LTD.

ADABAS and NATURAL
Systems & Programming
Duncan Bransom Limited
Tel: 01-253 2196

N.C.R.
Sales, Maintenance, Programming on complete range including 8020; 8200 series, 499, 299 and Peripherals.
Contact:
CONTRACT COMPUTER SERVICES
on 01-803 3402

WE BUY ALL MAKES OF REDUNDANT/OBSOLETE MAINFRAME COMPUTERS
Call us NOW on Maldon (0621) 54866
Telex No: GLO PLX 995601 R17
RAYBOLD COMPUTER SERVICES
Unit 12, West Station Industrial Estate
Spital Road, Maldon, Essex

FOR SALE PERKIN ELMER
3210 Processor
½MB Memory
16MB fixed/16MB removable disks
2 lines Comms MUX
300 lpm Printer
550 VDU
Carousel 300
£15,000 o.n.o.
Contact:
Dave Prout/Steve Pickard
01-247 5761

TAPE EVALUATOR
1600/6250 b.p.i. Computer Link dual density evaluator. Fully refurbished and carrying 12 months warranty with maintenance cover.
£5,475
Tel: 0272-849730

FOR SALE
Jacquard J500, 128K cpu, twin floppy disks (1 Megabyte x 2) includes Typerite Word Processing System, Diablo 630 Daisy Wheel Printer, ADDS Regent 40 Remote Terminal.
Tel: 0992 554441

SIRIUS 1 MICRO
256K 10 Megabyte Hard Disk
256K Floppy MS DOS cpm 86
Level 2 COBOL MS BASIC
forms 2 Wordstar,
immaculate condition, nearly new, £3,300
Tel: Software Applications
0732 362297

DISK COPYING SERVICE
OVER 50 FORMAT
Tel: 0473-214618
M & S Consultants
6 Great Colman Street, Ipswich

DEC and DATA GENERAL
Buy, Sell or Trade
- Nova 4 x
- 20 Mb Disk S S
- Nova 3 Memory
- 1144 Cabinet
- Eclipse S 120
- ATI-16
- Nova 2
- DN11-A
- RK05-F
- DB11-A
- H960 Cab
- PDP11 40

NEW! P9200 DG Compatible VDU £650 + VAT
Thomas Business Systems Ltd.

CENTRAL LONDON OFFICE
FREEHOLD
7,000 sq. ft.
Ree. M. A. J. Naylor
01-606 9611

NORTHAMPTONSHIRE COUNTY COUNCIL
COUNTY SUPPLIES
GRAPH PLOTTER AND COMPUTER AIDED DESIGN SOFTWARE

Tenders are invited for the supply, delivery, off-loading, installation and commissioning of a Graph Plotter and Computer Aided Design Software for Nene College, Northampton.

Full details and tender documents may be obtained from the County Supplies Officer, County Hall, Guildhall Road, Northampton NN1 1DN (Northampton 34833 — Extension 5007).

Completed tenders must be received by the County Secretary in the envelope provided by not later than 12 noon on Monday, March 19, 1984.

Late tenders will not be accepted.

FOR SALE
VAX 11/780
2 Mbyte Memory
Massbus Adaptors
RM05 Disk Drive
RM03 Disk Drive
TU77 Magnetic Tape
2 x LA120 DECWriter III
TE16 Magnetic Tape
Megatek 7250 Colour Graphics
Megatek 6250 Colour Graphics
DZ11 8 chan MUX
4 x VT101 Display
Please reply to Box No. 1286

WEST SUSSEX COUNTY COUNCIL
SUPPLY OF IBM DISK DRIVE

Notice is hereby given that the West Sussex County Council wish to receive tenders for the supply and installation of a new IBM 3380 Model 604 Disk Drive. The appropriate tender forms, together with copies of the Conditions of Contract and a Specification may be obtained on application to the Head of Computing Services, County Treasurer's Department, County Hall, Chichester, West Sussex, Chichester 777100 Ext. 2700.

The County Council do not bind themselves to accept the lowest or any tender received. All tenders should be submitted on the above-mentioned Tender Form, and should be delivered to the County Secretary of the West Sussex County Council at County Hall, Chichester, West Sussex in a [illegible] envelope or package on or [illegible] 12 noon on 6th March, 1984. Nothing should appear on the [illegible] of the envelope which would indicate the name of the sender.

Phone 061 861 0757 for terminals
LA34
LA120
VT100 SERIES
LA100
DATA-SOUTH DS180 PRINTER
HAZELTINE ESPRIT
MCS
269-271 Barlow Moor Road
Manchester M21 2GJ
Telephone 061-861 0757
Telex 667191 MCS G

APPOINTMENTS

Computer Weekly
Classified Department
Quadrant House
The Quadrant
Sutton
Surrey
SM2 5AS
Direct: 01-661 6080
Consultancies: 01-661 6767
Telex: Comweek 892084 BispreG

Direct client sales
Telesales Manager
Neil Thackray
01-661 3107

Field Sales
Manager
Mike White
01-661 3100

Consultancies Sales
Manager
Julie Hanneford-McInally
01-661 3452
Regional Office
Birmingham
Vic Sheret
021-356 4638
Production
Steve Lavar
01-661 3104

General copy deadline
3.30 pm Monday prior to Thursday publication
Senior Appointments
4 p.m. Friday prior to Thursday publication
Colour deadline
4 p.m. Friday prior to Thursday publication

Rates
£33 per s.c.c.
Quarter page 19 x 3 cols £1470
Half page 19 x 6 cols or 39 x 3 cols £2436
Full page 39 x 6 cols £4668

Box nos. £5 extra. Address back to c/o Computer Weekly, Classified Dept., Quadrant House, The Quadrant, Sutton, Surrey, SM2 5AS.

Supporting Human Resource Management Systems

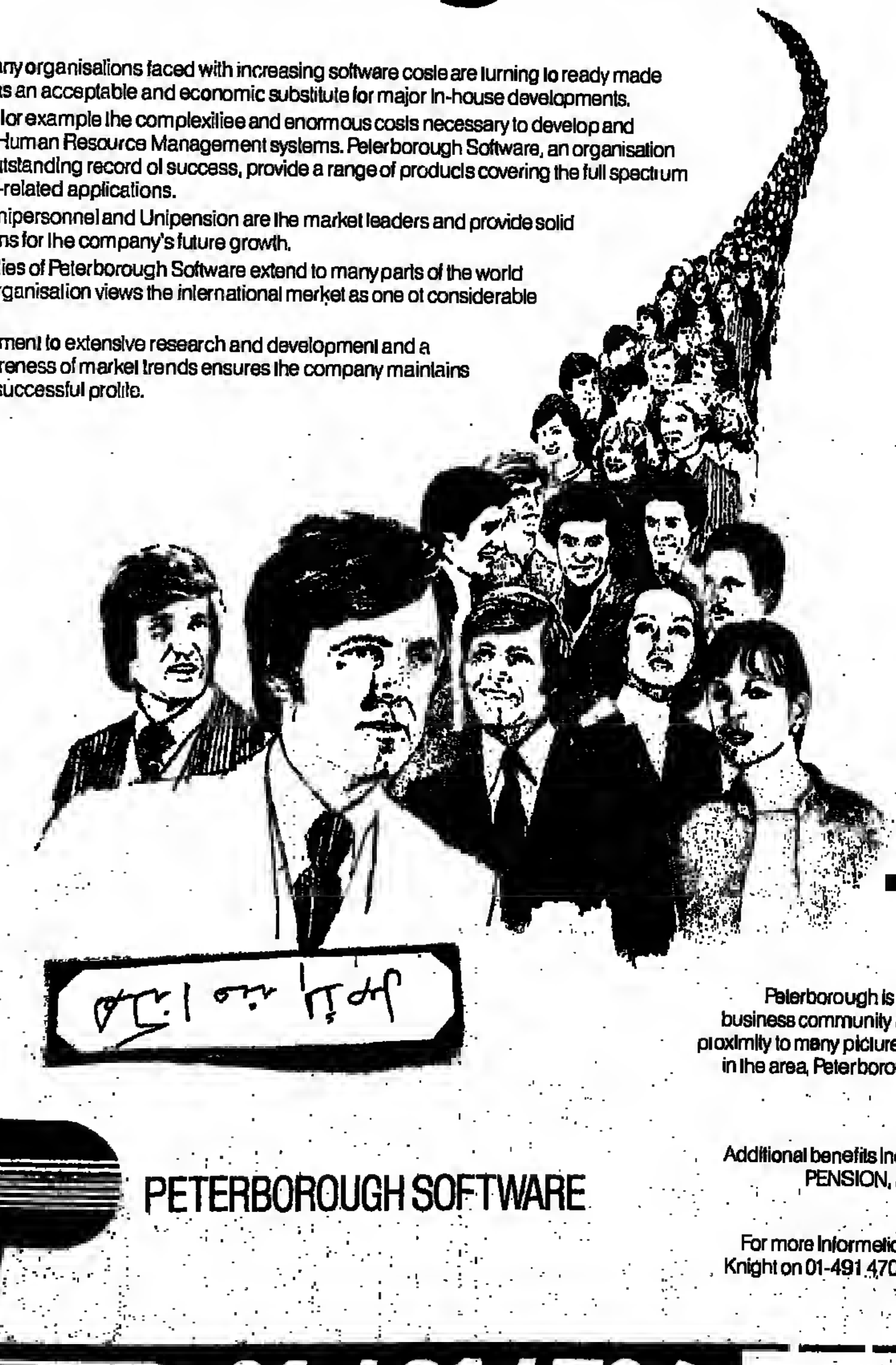
Today, many organisations faced with increasing software costs are turning to ready made systems as an acceptable and economic substitute for major in-house developments.

Consider for example the complexities and enormous costs necessary to develop and maintain Human Resource Management systems. Peterborough Software, an organisation with an outstanding record of success, provide a range of products covering the full spectrum of people-related applications.

Unipay, Unipersonnel and Unipension are the market leaders and provide solid foundations for the company's future growth.

The activities of Peterborough Software extend to many parts of the world and the organisation views the international market as one of considerable potential.

A commitment to extensive research and development and a keen awareness of market trends ensures the company maintains its highly successful profile.



At the heart of Peterborough Software's operation is the Engineering Division which places a high priority on continuous product development.

To keep pace with the current expansion programme they now wish to recruit a key member to the development team

IMS EXPERT
c£15,000 + car

If you are an IMS expert and have extensive IMS DB/DC experience in a Systems Programming or Supporting role, together with sound IBM ASSEMBLER language experience, we would like to talk to you!

You could play an important role in the implementation and development of Peterborough Software products operating under IMS.

...in Peterborough

PETERBOROUGH SOFTWARE

Peterborough is a cathedral city with a very attractive blend of old and new. It boasts a growing business community and provides an outstanding range of leisure and shopping facilities. Its close proximity to many picturesque villages makes this an ideal choice for relocation. To encourage growth in the area, Peterborough Development Corporation will provide considerable help in locating new property.

Additional benefits include 5 WEEKS HOLIDAY (1984 holidays honoured), NON-CONTRIBUTORY PENSION, PERSONAL LOAN SCHEMES, BUPA and ASSISTANCE WITH RELOCATION.

For more information on this exciting opportunity and to arrange an immediate interview, contact Knight on 01-491 4706 quoting Ref YY600. Alternatively complete and return the attached coupon without delay.

Knight
01-491 4706
24 Hours
Knight Computer Services Ltd
14 Old Park Lane, London W1Y 4NL
PART OF THE HUNTERSKIL GROUP

Return to:-
(no stamp required)
Knight Computer Services Limited, Recruitment Division, Free Post 16, W1E 8JZ.

Name ____________
Address ____________
____
Tel no (Home) ____________ (Work) ____________
Position Sought *IMS EXPERT*
Ref no. YY600

CONTRACTS

All these... NOW

IBM

Location	Skills Required	Position
Sussex/ Hants	S/38 RPG III ± MAAPICS	Prog/Analyst
Oxfordshire	MVS JES2 VTAM	Systems Prog
City	FOCUS-DB ANY IBM TO LRN PC	Programmers
London	DS/MVS JCL COBOL DL/1	Senior Prog – Analyst/Prog
London	MVS JCL COBOL	Programmer
Midlands	IBM TOTAL SHADOW COBOL	Prog/Anal
Herts	OS/MVS JES3 ASSEMBLER IMS	Systems Prog

ICL

Location	Skills Required	Position
New Malden	TOTAL	Systems Designer
New Malden	VME/B 2900 TPS COBOL	Programmer
New Malden	VME/B 2900 IDMS TPMS COBOL	Anal/Prog
New Malden	VME/B 2900 COBOL	Programmer
Woking	COBOL JACKSON GED 3	Programmer
Woking	VE 2900 IDMS DDS TPMS DATA DISPLAY	Anal exp. Systems Testing
Reading	SYSTEM 25 ASSEMBLER	Test Programmers
Dunstable	2900 VME IDMS TPMS	Designer + Senr Prog + System Testers + Prog
London	SYS 4 VME DME COBOL TPS TPMS (CONVERSION DME-VME)	Programmers
Durham	2900 IDMS TPMS VME COBOL	Sen Progs/Team Leaders
Manchester	DRS PASCAL C + COMMS EXPER	Programmer
Reading	2900 + VERY GOOD PASCAL	Programmer
Reading	2900 VME IDMS TPMS OMAC	Programmers
Birmingham	TPMS TO AUDIT TP SERVICE	Consultant
Aylesbury	GEORGE 3	Tech Support + Programmer
Bracknell	SYS 25 ASSMBLR + S/WARE ENG	Project Leader
London/ Staines	2900 COBOL IDMS TPMS	Designers + Prog
Edgware	1900 PLAN	Programmer
London	VME IDMS	Anal/Designer
Herts	2900 VME/B IDMS COBOL	Prog/Ansls
Staines	TPMS COBOL GOOD SYTEMS EXP. TO INSTALL NEW TPMS RELEASES	Designer

Minis/Micros

Location	Skills Required	Position
Berks	M6800 MACRO OR ASSEMBLER OR C GRAPHICS	Systems Backgrd
Berks	MASS STORAGE TAPE DEVICE RSX11/M ASSEMBLER + MACRO 11	Senior Prog
London	MICROS + COMMUNICATIONS	Engineer Backgrd
Berks	VAX 11/70 PASCAL GRAPHICS	
Herts/ N. Ldn	PDP 11 RSX11M MACRO 11	Software Engs
Herts/ N. Ldn	Z80 CPM ASSEMBLER	Software Engs
Herts	VAX VMS COBOL	Programmers
Herts	ASSEM + CORAL	Systems Prog

Specialists

Location	Skills/Position
London	UNIX (SPECIALISTS ONLY)
Sussex	SIMULATION SPECIALISTS ESP + SEL32 EXPER
Berkshire	NUMERATE DEGREE/RADAR SIGNAL PROCESSING/REAL-TIME APP/CORAL 66 OR FORTRAN/MASCOT/VAX/SIMULATION/MATH MODELLING/PERFRM EVAL/COMPUTER GRAPHICS – SOFTWARE ENGINEER
City	FOCUS ON IBM TO LEARN IBM-PC PROGRAMMER
London	SYS 25 CONSULTANT COMMS + NETWORKING
Telford	IDMS PRODUCT MAN IDMS DESIGNER FOR RECOVERY
Bracknell	MICRO ASS PASCAL + COMMS PRODS + SNR DESIGNER (± VIEWDATA/ANALOG ENGINEER AN ADVANTAGE)
Reading	2900 COBOL SYSTEM TESTING OF TME (REPORTMSTR QUERYMASTR PDS PROSPER PACKAGE X NEEDED)
Dunstable	2966 IDMS TPMS PERFORM + TUNING SPECIALIST
Manchester	BUS CONSULTANT OFFICE SYSTEMS + ORS ± NETWORK
Manchester	COMMS CONSULT X25 DM1 DISTRIBUTED TP DATABASE
Herts	VAX VMS + UNIX IMPLEMENT + DEBUG SOFTWARE – SYSTEMS CONSULTANT
Herts	EXECUTIVE DESIGN + IMPLEMENTATION – SYSTEMS DESIGNER PROGRAMMER

Other

Location	Skills Required	Position
Acton	ATE HEWLETT PACKARD EXPER.	Test Engineer
Chiswick	DATA GENERAL BUSINESS BASIC	Programmer
Reading	OMAC DEVELOPMENT EXPERIENCE	Programmer
Manchester	HONEYWELL DPS8 ± ICL	Business Consult
City	TANDEM COBOL	Senior Prog
Hampshire	UNIVAC 1100 COBOL ± SSG	Progs + Prog/Anal
Hampshire	REDIFON C3 VIEWDATA 1800 – 2800	Progs + Prog/Analyst
Berkshire	M68000 ASSEMBLER	Hardware Design
Berkshire	M6800 ASSEMBLER REAL TIME HARDWARE EMPATHY ± EXORCISOR	Programmer/Anals

Overseas

Location	Skills Required	Position
France	S38 RPGIII FRENCH SPEAKING	Analyst/Prog
Europe	DOS/VSE CICS CSAM TOTAL	Systems Prog
Germany	VAX VMS VAXBASIC FMS	Analyst/Prog
Saudi Arabia	DEC VAX	Trainer
Saudi Arabia	DEC VAC	Systems Prog
Saudi Arabia	WANG – INSTALLATION OF HARDWARE AND SOFTWARE IBM/SNA INTERFACE	
Saudi Arabia	IBM MVS PL/1 IMS-DB/DC ADF TSO/SPF	
Sweden	MS/DOS OR CP/M 86	Analyst/Progs
Kuwait	2900 VME/B IDMS COBOL	Tech. Specialist
Kuwait	2900 VME/B IDMS COBOL	Analyst/Prog

Ring our Contract Resource Department now on 01-222 6722, quoting reference C007 or return the FREEPOST (no stamp required) coupon below

(7977)

...and more

[illegible] · Prompt weekly payment · Sick pay scheme · Free overseas medical cover · Professional reputation · [illegible] consultant · Mortgage and insurance advice · Blue chip [illegible] clients · Variable term contracts · Variety and choice · Computerised database

By return of post please send an application form to:

Name__________

Address__________

Home tel. no.__________

Business tel. no.__________(used with discretion)

I am interested in contract ☐ or permanent ☐ positions. Please tick box

COMPUTASTAFF

FREEPOST, London SW1H 9BR. 01-222 6722.

C007

CONTRACT CONSULTANT

Minimum £10,000 Basic + High Incentive Commission Structure with Private Health Insurance

As part of our expansion plans for 1984, we require an experienced and highly motivated person for this established recruitment agency.

Ideally you will be aged between 25 and 30, and have a minimum of three years' experience as a consultant in the contract operations field.

This is a realistic opportunity for a high achiever with a first-rate negotiating capability to earn £25,000 pa and more.

Only applicants with a successful record of achievement to date should apply.

Write with full details to Box No. 1289
Computer Weekly, Quadrant House
The Quadrant, Sutton, Surrey

(All applications will be treated in the strictest confidence)

COBOL PROGRAMMERS

ENVIRONMENT: 2 × ICL 2946, ME 29, SYSTEM 25 DRS, DME, TPS, COBOL, ASSEMBLER

Rediffusion Simulation are the world leaders in the design and manufacture of flight simulators. Vacancies have arisen for two Cobol Programmers for developments on the 2946 computers.

Applicants in their twenties should have 1-2 years' Cobol programming experience and, if selected, will be working in small development teams on a variety of applications, including writing and testing BATCH and on-line programs, as well as systems test. Some knowledge of TPS would be useful but training would be given if necessary.

In the first instance applicants should write including comprehensive c.v. or phone for an application form to:

Mr J. A. Parry
Personnel manager – Work and Recruitment
REDIFFUSION SIMULATION LIMITED
Gatwick Road, Crawley
West Sussex RH10 2RL

Telephone: Crawley 28811 ext. 2

Database Team Leader

National & Provincial Building Society, the sixth largest society in the country, are embarked upon an ambitious project to develop a corporate database and install a terminal network in its 337 branches. To assist in this process we are looking for a manager to join our Technical Support Group, and lead the database team in the design and implementation of this large database.

The successful applicant will have the opportunity to do considerable original design work on the new systems. Applicants should have at least 5 years DP experience with the last 3 years using a Database Management System. Experience of database design techniques, an inquiring and innovative mind and the ability to meet exacting timescales are all essential pre-requisites. Experience of Burroughs DMSII would be a distinct advantage.

Based in Bradford this position offers the range of benefits expected from a large responsive employer. Initial salary will be up to £12,500 depending on experience.

Please reply in the first instance to:

Mrs. S. Middleton
Personnel Officer
National & Provincial Building Society
Provincial House
Bradford BD1 1NL

National & Provincial

Formerly Provincial Building Society and Incorporating Burnley Building Society

---

UNIX&68000

Microcomputer Systems

Attractive 5 figure salary + car

Plessey Microsystems Limited is a rapidly growing and profitable company involved in the in-house design and manufacture of leading-edge microcomputer systems, including networked systems. Our products are making a major impact in commercial, engineering and scientific environments.

In line with our 50% growth target in the next year, we have key opportunities in our PRODUCT SUPPORT and MARKETING functions.

Our primary requirement is for in-depth knowledge of UNIX but similar experience of other microcomputer operating systems will be considered. Knowledge of networking and/or communications will be an advantage.

These positions will involve a great deal of customer contact, and so the personal characteristics to operate effectively as an ambassador of the company are essential.

An attractive 5 figure salary is available, together with a company car and a first class benefits package. Full expenses will be provided to relocate to this central rural environment which has excellent communications to London and the South-East.

Please telephone George Elms for an informal discussion on Towcester (0327) 50312 between 9.30am and 5.30pm or Dave Willmore on Towcester (0327) 52273 between 7pm and 8.30pm (reversing the call charge). Alternatively fill in the Quick Response Coupon or send a full c.v. to:- John Lerner, Personnel Executive, Plessey Microsystems Limited, Water Lane, Towcester, Northants NN12 7JN. Please quote reference CW/P/868.

QUICK RESPONSE COUPON

CW/P/868

Name__________Age_____

Address__________

Telephone__________
(please indicate most convenient times)

Present job title and nature of work__________

(continue on separate sheet if required)

Name of present employer__________
(if you wish to state)

Present salary £__________pa (if you wish to state)

PLESSEY

COMPUTER AIDED MANUFACTURE

Cambridge

CADCentre Limited is a new Company which has evolved from one of the most respected CADCAM research organisations in the country. A range of products is being developed to complement and extend CADCentre's existing Manufacturing Industry products.

The Company offers a pleasant working environment, with flexible working hours and 5 weeks' holiday. Relocation assistance is available where appropriate.

Project Leader

You will have responsibility for a team of Analyst/Programmers developing computer aided tools for manufacturing industry in collaboration with major industrial companies. You need to have experience in engineering programming/analysis using formal techniques. You must be fluent in FORTRAN, preferably 77, and have a working knowledge of at least one of the following:

PRIME/PRIMOS, IBM/TSO OR VAX/VMS.

You should have led a team through a successful product development cycle. You should be prepared to produce results to an agreed project plan within demanding timescales. You should be familiar with the problems of the Engineering/DP interfaces in industry and be confident in leading a team of both engineers and computer specialists. Proven experience is more valuable than formal qualifications.

Please send a c.v. or phone for an application form, quoting reference JMAS 01, to
Mrs G. M. Dodd,
Personnel Manager,
CADCentre Limited,
High Cross,
Madingley Road,
Cambridge CB2 0HB

Analyst/Programmers

You need a strong FORTRAN, preferably 77, programming background and experience of working with formal software development procedures in a technical environment. You should be conversant with at least one time-sharing command operating system.

Manufacturing industry experience would be an advantage. You will have an innovative approach to your work and be able and willing to communicate with your team colleagues.

These posts offer you the opportunity to work on challenging assignments utilising databases, graphics, modelling and user-interface tools and techniques. You should be qualified to degree level in a numerate scientific or engineering discipline.

[illegible]

CADCENTRE

Computer Professionals

A new focus for your ambitions in a vital industry

ENFIELD **up to £14,000**

As a vital source of energy, gas continues to grow from strength to strength providing a crucial fuel to industry and private customers alike.

Our policy at Eastern Gas is to employ the most advanced techniques available to provide an unbeatable service to all customers. Hence, computer professionals will not be surprised to learn that the level of our computer technology is second to none, being continually updated to keep in line with the latest advances in the field.

We are committed to an ambitious development programme for the next 5 years and require additional development staff to meet its demands, within an advanced 2900 environment.

The Region currently runs a dual ICL 2976 under VME/B, and also a 2966.

We use structured programming; most of our new systems will be TP based and use Database; and we are committed to the use of Data Analysis and Data Dictionaries.

Career opportunities are outstanding, and we are currently looking for experienced professionals – talented, ambitious men and women – for the following posts at our modern offices in Enfield, just north of London:

Analysts

With a minimum of 3 years systems and programming experience in a relevant field.

Programmers

With a minimum of 2 years COBOL experience.

In addition to generous salaries, there is a benefits package which includes sick pay and pension schemes, staff restaurant, and minimum 28 days holiday a year. Relocation assistance may be made available where applicable.

For further details and an early interview ring Ted Kimberley on 01-3661234, day or Duncan Lockett on Hoddesdon [0992] 460563 evening. Alternatively, write to: Personnel Officer, Eastern Gas, Tower Point, Sydney Road, Enfield, Middlesex EN2 6TT.

EASTERN GAS

THE MICRO TECHNOLOGY GROUP

The Micro Technology Group, founded in 1978, is now one of the most firmly established systems houses in the South East of England. Its product range includes both IBM and WANG business systems, which it sells to a broad portfolio of customers in the South East of England and to a number of major corporations throughout Europe. It also provides a wide range of hardware and software products, several of which have been developed in house, to an extensive dealer network.
The group is based in the Pantiles, the elegant eighteenth century heart of Tunbridge Wells. The area provides reasonably priced housing, an excellent shopping centre and good schools. It is well positioned for access by train to London and, by means of the new M25, to the national motorway network.
Micro Technology is now a multi-million pound company and will be expanding considerably over the next two years. As part of this expansion we require.

SALES PROFESSIONALS
IBM AND WANG PC
c.20-40K + CAR

If you are young, articulate, intelligent and hard working, with a proven record of success in the microcomputer or related industry, and you want to continue that success in the Garden of England, we need you to help us sell the IBM and WANG personal computers.

SALES PROFESSIONALS
DISTRIBUTION OF PERIPHERALS FOR IBM-PC
c.20-40K + CAR

As one of the leading suppliers of peripheral equipment for the IBM-PC, we need the services of a self-motivated sales professional, preferably with a good understanding of IBM comms, to sell these market leading products to IBM authorised dealers and national accounts.
If you feel you have something to offer for either of these requirements, please telephone Nigel Wood on (0892) 45433.

TECHNICAL MANAGER
TO 18K + CAR

Reporting directly to the technical director, the person appointed will have had experience of managing a small team of people.

His department is responsible for:

- Installation and commissioning of hardware
- Field service
- New product design

He will also be responsible for:

- Handling third party maintenance contracts
- Supervising research and development projects
- Taking hardware developments into production
- Supervising related system software work

Please send applications, including current cv to:
Micro Technology Limited
51-53 The Pantiles
Tunbridge Wells
Kent TN2 5TE

(7980)

££

18,000 REASONS WHY

££

this could be the job for you ….

SYSTEMS & PROGRAMMING MANAGER

Our client, part of a major International Corporation, whose activities cover a wide range of computer services, electronics and telecommunications, offer this challenging career opportunity.

Ideally, you should have solid systems and programming experience, gained in an IBM environment, together with specialised telecommunications skills – preferably distributed data processing.

Reporting to the M.S.M., you will be an experienced man-manager – possibly a Project Manager seeking to move up the ladder and play a major role within a rapidly expanding and dynamic company

If your experience is relevant, you are interested in working on the Surrey/Hants border, a COMPANY CAR and believe you are worth up to £18,000 plus and substantial benefits then phone
Stuart Blake on Farnborough 516141
to arrange a confidential interview. Alternatively send detailed c.v. quoting ref: SB420

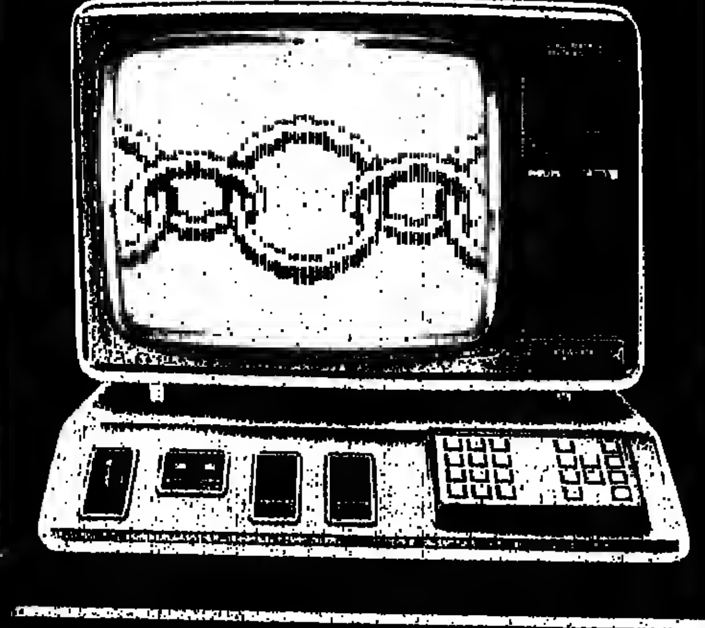
TRIDENT COMPUTER SERVICES GROUP PLC

TRIDENT HOUSE.
38/44 VICTORIA ROAD, FARNBOROUGH.
HANTS. GU14 7UD
Telex. 858233 Tel Farnborough (0252) 516141

SALES and MARKETING PROFESSIONALS

COMMUNICATION SYSTEMS (Viewdata)

OUTSTANDING LINKS
NEEDED FOR OUR
UNIQUE COMMUNICATION
CHAIN



THE COMPANY

Our client, CENTRE LINK COMMUNICATIONS LTD., is a leader in the development of a series of advanced communication systems which has outstanding market potential for various groups of professional bodies and members of the general public in the U.K.

Its first commercial system, PROPERTY LINK, is leading the market in systems designed specifically for ESTATE AGENTS in various property markets in the U.K. and overseas. The rapid acceptance of PROPERTY LINK is a practical indicator of the company's outstanding growth potential and it is ideally placed to exploit markets demonstrating current "explosions in demand" for more sophisticated communication systems. The PROPERTY LINK system has been designed in conjunction with Baric (the computer services company owned jointly by Barclays Bank and ICL) and it has access to considerable technological and financial resources.

THE POSITIONS

To realise its exciting growth potential, the company is undertaking a major expansion of the promotional effort behind PROPERTY LINK system and it wishes to fill a number of critical missing links in an expanding sales and marketing structure as shown below:

- U.K. MARKETING MANAGER (circa £18K + CAR)
- U.K. SALES MANAGER (circa £18K + CAR)
- SENIOR SALES EXECUTIVES/POTENTIAL FIELD MANAGERS (circa £15K + CAR)
- SALES EXECUTIVES (circa £9K + CAR)

The two senior positions are new appointments which will report directly to the Sales and Marketing Director at Board level. The MARKETING MANAGER will assume total responsibility for designing the marketing strategies and plans for the organisation while the SALES MANGER will have the critical role of developing a sizeable and highly effective sales team. The SENIOR SALES EXECUTIVES will be experienced computer/communication sales professionals and will be prime candidates for rapid promotion into field management at the next stage of field force expansion. The SALES EXECUTIVES positions represent ideal opportunities for talented salesmen/women from other fields to enter this highly demanding and rewarding market place.

These positions are associated with extremely competitive basic salaries plus an excellent package of fixed benefits. Moreover, the results orientated incentive schemes are first class as are the prospects for future career development.

THE APPLICANTS

For the MARKETING MANAGER and SALES MANAGER positions, candidates will be aged between 30 and 40 and will have had a minimum of 2 years' successful experience in marketing management and sales management respectively. Preference will be given to individuals who have had proven experience in D.P. sales and/or the estate agency market.

The SENIOR SALES EXECUTIVES will be aged between 28 and 40 and will also offer a proven track record of over 2 years' in computer/communication technology sales. Candidates for the SALES EXECUTIVE positions will be aged between 28 and 40 with a proven track record in a competitive sales environment and will also offer a good standard of education and a high level of numeracy. The ideal candidates will be self-motivated "high achievers" who have the discipline and determination to win in a competitive sales and marketing environment.

For further information phone John Davies between 8 am and 7 pm. Local interviews will be held in early March and successful candidates will be invited to a demonstration of the PROPERTY LINK system in operation.

TRIDAS

Recruitment Division,
65 High Street, Marlow, Bucks. SL7 1BA
Telephone: Marlow (06284) 75204

CENTRE LINK

EDP MANAGER

WATFORD **UP TO £15,000**

A move into management is offered the D.P. professional with extensive COBOL programming experience in a multi-user real time environment. Reporting to the Financial Director, the EDP manager has total responsibility for the main computer installation, a new DG MV4000 replacing an Eclipse C300, and with the assistance of two operations staff, for providing EDP services to the company. Responsibilities include application systems development and maintenance, introducing new information processing methods, and working with other group companies.

With sales of £3¼ million, 140 employees, and new top management, Ealing Beck Limited, the subsidiary of a small U.S. public company, is increasingly successful in its business of manufacturing optical components and distributing them worldwide through catalogue mailing.

In this stimulating environment, the immediate task of the successful candidate will be completing the conversion of existing commercial applications to the new equipment. The next major project is to introduce new production control systems, for which experience of manufacturing systems would be a distinct advantage. If you believe you can succeed in this position, please write with details of your career to Chris Hodson, Ealing Beck Limited, Greycaine Road, Watford WD2 4PW.

Ealing EALING BECK LTD

GREYCAINE ROAD
WATFORD WD2 4PW
TEL: WATFORD (0923) 42261 TELEX: 935728

(7866)

FOR
CLASSIFIED
ADVERTISING USE
DIRECT LINES

RECRUITMENT CONSULTANCIES
(01) 661 8787

DIRECT ADVERTISERS
(01) 661 8080

Developing software systems for Saudi Arabia's public authorities

The U.K. and Saudi Arabian Governments are working together on an exciting new technical co-operation agreement. The United Kingdom is represented by British Arabian Technical Co-operation (BATC), a government agency formed to provide British expertise on a Government-to-Government basis to the countries of the Arabian Peninsula.

BATC now seek very experienced and well-qualified computing professionals to work as advisers on a number of interesting projects. All posts are based in Riyadh, the capital of Saudi Arabia.

The Ministry of Finance and National Economy's present installation includes an NCR Centurian 85/55 using VRX/COBOL and they now need to develop applications, initially using the TRANPRO on-line system and TOTAL data base. However, the main objective is to review applications which may require the acquisition of new hardware and software.

Senior Systems Analysts

c. £26,000 p.a. inc. tax free

An appropriate degree plus experience of government financial control requirements are essentials for these posts. You'll need to be self-starters and able to operate at a senior level. Knowledge of the Ministry's present hardware and software is not required.
Quote Ref: BA/105

Programmer

c. £18,000 p.a. inc. tax free

A degree or a Technical College Diploma plus at least ten years' experience including a good knowledge of VRX/COBOL are essentials. Some experience with TRANPRO, TOTAL and NCR 85/55 would be advantageous.
Quote Ref: BA/106

The Ministry of Municipal and Rural Affairs has an IBM 4331 which is used for information systems for urban and regional planning and administration. These systems are to be considerably developed and new hardware and software will be acquired in the next 12 months.

Systems Analysts/Engineers – Computer Centre Experts

c. £20,000 p.a. inc. tax free

To advise on all questions relating to present hardware and systems software as well as that projected for the new Computer Centre.

You will need a masters degree in electronics engineering, computer science or similar and six years' experience or a bachelor's degree and ten years' experience – including systems engineering, tendering, analysis of hardware and supervision of installation and the operation of computer centres.
Quote Ref: BA/107

Programmers

c. £18,000 p.a. inc. tax free

One to work on modifying existing software to meet town planning needs and develop new software for urban and regional planning, land registration, mapping and local planning. The other to modify existing software and develop new software for expediting and co-ordinating projects, administration and documentation.
Quote Ref: BA/108

For either post, you will need a Technical College Certificate and a minimum of six years' experience which should have included FORTRAN and COBOL programming. Experience in the development of applications software for public administration users is essential.

Riyadh is a rapidly expanding city. At present the only computer facilities available to the Municipality are terminal links to the Government's National Computer Centre IBM 4300.

Computer/Microfilm Expert

c. £22,000 p.a. inc. tax free

To develop their own computer centre, the Municipality seek expert advice on tender evaluation, computer applications, operation and staffing requirements and staff training.

You will need to be a graduate with extensive experience which should have included working with a major U.K. local authority.
Quote Ref: BA/109

(7958)

These contracts are with British Arabian Technical Co-operation for a period of two years, renewable by mutual consent. In addition to the tax-free salaries, the posts attract a comprehensive benefits package.

For further details, please write quoting appropriate reference number and enclosing a full c.v. to: Miss T. Sutherland, Recruitment Manager, BATC, 12/18 Grosvenor Gardens, London SW1W 0DZ. Or telephone 01-730 4511, ext. 273.

British Arabian Technical Co-operation
Part of the British Technology Group

Hoechst

PROJECT LEADERS

to £15,000

plus substantial benefits

THE COMPANY

The largest pharmaceutical company in the world, Hoechst employs over 7,000 people in the U.K. alone. In addition to its activities in the fields of medical products, industrial plastics, animal health and plant protection, Hoechst subsidiaries and associated companies include such household names as Berger Paints, Rochas perfumes, Trevira, Clynol and Cuprinol. The U.K. headquarters is a modern purpose-built office complex situated at Hounslow, easily accessible by road, rail or the London Underground.

THE DP ENVIRONMENT

Currently an IBM 4341 model 2 running MVS, CICS, DL/1 and COBOL, with a 3083 model E due to be installed in March. In addition, Hoechst is committed to personal computing, with 19 Apples in use under the guidance of an Information Centre.

THE VACANCIES

Two project leaders are required initially, with further expansion planned. They must be experienced systems analysts, preferably - but not essentially - with an IBM background and a good understanding of TP and database concepts and practice. Similarly, the successful applicants need not be former programmers, but they must be able to lead a programming team. The principal qualities needed are powers of leadership, self-motivation, and the ability to take a project from feasibility to implementation.
It is unlikely that candidates with less than four years' relevant experience will be suitable.

THE REWARDS

are considerable! With a basic salary of up to £15,000 pa, a review in June, a bonus based on Company results (an additional 2½% paid in 1983) and the possibility of an Exceptional Merit Bonus of up to 8% of salary for outstanding employees, financial rewards are among the best in the industry. In addition, benefits include:

- free private medical insurance
- subsidised staff restaurant
- discount company shop
- 23 days leave per year
- 35 hour working week
- full relocation expenses where applicable

and the many other advantages that only working for a major multinational corporation can bring.

YOUR NEXT MOVE

is to telephone 01-499 1948 for an application form, quoting ref: GM/2/73, or write with a FULL cv to Geoff Mackenzie, P-E Appointments Division, 166 Piccadilly, London W1V 9DE.

(7806)

PE

The P-E Consulting Group

CONTRACTS

IBM

DOS/VSE, CICS, SNA SYSTEMS PROGRAMMERS (END APRIL)	BERKS
VM SYSTEMS PROGRAMMER	MIDDX
MVS SYSTEMS PROGRAMMER	SURREY
MVS/JES 3 SYSTEMS PROGRAMMER	LONDON
CMS ORDER PROCESSING ANALYST	BUCKS
CICS, DL/1 INDUSTRIAL APPLICATIONS ANALYST	SURREY
DOS/VSE, CICS, DL/1 COBOL ANALYST	MIDDX
DOS/VSE CICS DL/1 COBOL ANALYST/PROGRAMMER	MIDDX
MVS IMS/DB JSP COBOL PROGS. (MARCH/APRIL)	LONDON
370/TSO COBOL PROGRAMMER	MIDLANDS
SYSTEM 34, RPG II ANALYST/PROGRAMMER	BERKS
VM, DOS/VSE COBOL PROGRAMMERS (APRIL)	NW1
CICS, ASSEMBLER PROGRAMMER (IMMEDIATE START)	LONDON

ICL

SYSTEM 25 DESIGNERS (IMMEDIATE STARTS)	MIDDX
SYSTEM 25 ASSEMBLER ANALYST/PROGRAMMERS	MIDDX
SYSTEM 25 IS COBOL PROGRAMMER	LONDON
2900 VME COBOL IDMS, TPMS PROGRAMMERS	LONDON
2900 VME COBOL IDMS, TPMS PROG. & ANAL./PROG.	HERTS
2900 VME COBOL IDMS, TPMS PROGRAMMERS	SURREY

OTHERS

DIGITAL SOFTWARE PROGS., PASCAL/ASSEMBLER, GRAPHICS	BERKS
VAX COBOL ANALYST/PROGRAMMERS	MIDDX
PDP COBOL, MACRO II PROGRAMMER	HANTS
HP3000 COBOL, IMAGE PROGRAMMERS	LONDON
HP3000 ANALYSTS	LONDON
HARDWARE/SOFTWARE ENGINEER	SUSSEX
MICROPROCESSOR SIGNAL PROCESSING ENGINEER	SURREY
RF 1F DESIGN ENGINEER	SURREY
UNIVAC 1100 COBOL BANKING EXP.	ESSEX
HP 1000 FORTRAN 77 PROGRAMMER	ESSEX
HP 3000 COBOL PROGRAMMER	S. WALES
DATAPOINT DOS or RMS PROGRAMMER	WILTSHIRE

For details of these and other on-going requirements, please contact Lorraine, Lynne, Wendy or Tony at KPG, or contact Lorraine on Walton-on-Thames 245552 (evenings and weekends).

KPG
01-948 5922
KPG Computer Support Services Limited
Cobden House, Park Lane, Richmond, Surrey TW9 2RA

(7944)

UNIQUE OPPORTUNITY IN PUBLISHING

U.K. SOFTWARE MANAGER

McGraw-Hill is a billion dollar world leader in publishing and the communications technologies. Over the last three years alone, the U.K. Book Company has achieved substantial sales and profit growth especially in the areas of computer books and software.

We now wish to recruit a U.K. Software Manager to spearhead a major sales drive and increase our market share in this area of high opportunity.

The person appointed must be commercially minded; show a good track record in selling educational, small business and home user software to the U.K. market and have the technical ability to present effective demonstrations of McGraw-Hill software.

Apart from outstanding career opportunities, there is an excellent commencing salary; a bonus scheme; company car and an attractive benefits package.

Applications in confidence to:

Paul Jenkinson
U.K. & European Personnel Director
McGraw-Hill House, Shoppenhangers Road
Maidenhead, Berks SL6 2QL

Telephone: (0628) 23431

(7566)

Graduate Programmers and S/W Engineers

AVON/WILTS/SOM'T/GLOS & S. WALES

Superb career opportunities exist for Graduate Programmers and Software Engineers throughout the West Country in both Technical and Commercial environments.

Utilise and fully develop your skills in the following areas:–

- ★ Telecommunications – PABX systems
- ★ Real-time and Microprocessor controlled systems
- ★ Off-shore applications and data acquisition
- ★ Software houses/bureaux – ICL, IBM and DEC based
- ★ Insurance/finance – Database, on-line, "office of the future"

LET AB SHOW YOU THE WAY

(7964)

AB Executive (Bristol) Ltd
Tel: (0272) 426631

CONTRACT OPPORTUNITIES IN SOUTH AFRICA

We would like to hear from experienced DP professionals for long- and short-term contracts with top international companies in Johannesburg and Durban. Applicants should have one of the following skills:

Database development and system balancing/fine tuning on large Burroughs mainframes, knowledge of SMS 2 and NDL preferred. DMS and file structuring on medium Burroughs mainframes (4900s and 3900s).

Cullinan IDMS on large IBM mainframes. ICL VME/B with ability to train.

Attractive rates, sunshine, tax benefits, return air fares.

WRITE with full c.v. and including home telephone number to Mr L. R. Bugden, quoting Ref: 560.

Clifton-Donkin Ltd (Recruitment Consultants)
Malcolm House, 12 Orange Street,
Haymarket, London WC2.

(7997)

Clifton·Donkin

DATA PROCESSING MANAGER

NFER-NELSON is the country's leading publisher of educational and psychological tests and research. We require a Data Processing Manager to control a newly established MAI 310 on-line system and supervise the order processing department.

This is an opportunity to join a medium size but expanding company and advise management on all aspects of new technology in our product base as well as internal systems and procedures.

The successful candidate must demonstrate good general technical skills, have a working knowledge of Business Basic and the ability to analyse, programme, develop new systems and to communicate at all levels. Some experience of managing a small but very supportive department would be an advantage.

Starting salary c.£10,500 per annum.

For an application form please contact:

Sue Martland
NFER-NELSON LTD
Darville House, 2 Oxford Road East, Windsor
Tel: Windsor 68861

INTEL SYSTEMS – CAREER INTERNATIONAL OPPORTUNITIES FOR MARKETING SPECIALISTS

intel
DELIVERS SYSTEMS

- **✱ UNIX SYSTEMS FOR COMMERCIAL OEMs**
- **✱ REAL TIME SYSTEMS FOR TECHNICAL OEMs**
- **✱ SINGLE BOARD COMPUTERS**
- **✱ DATABASE MANAGEMENT SYSTEMS CONNECTING MAINFRAMES TO PCs**
- **✱ TRANSACTION PROCESSING SYSTEMS FOR SOFTWARE VALUE ADDERS**
- **✱ STATE OF THE ART VLSI TECHNOLOGY**

Intel, inventor of the microprocessor and acknowledged leader of the microcomputer industry, is making a major thrust into the computer systems business: the product range is based on the industry's leading microprocessor architecture.

A key element of this programme is the creation of a European Marketing group based at Swindon, which has been established to support our European Sales Force and customers. It is being staffed by product marketing, customer marketing and technical support specialists for OEM products, covering a wide spectrum of applications.

We are looking for experienced marketing, sales and technical support specialists for the following product areas – Real-time Technical OEM, Commercial OEM and Database Management.

Successful candidates, probably aged 25-35 will be presented with a unique career opportunity to operate at the forefront of technology with a company at a high growth stage in the systems business. Travel within Europe will be required, together with in-depth training on an annual basis in California, Oregon, Arizona or Texas.

OUR IMMEDIATE NEEDS ARE IN THREE KEY AREAS:

CUSTOMER MARKETING

Candidates should be able to develop close working relationships with the field sales force, with the objective of acquiring new business. Sales experience in OEM small computer systems is essential, together with well developed commercial skills.
International travel will be required and some European language skills are highly desirable.

PRODUCT MARKETING

To undertake European responsibility for product lines. Key responsibilities are generating sales development plans and identifying/implementing marketing programmes throughout Europe, including new product launches, merchandising and training.

TECHNICAL MARKETING

The requirement is for in-depth skills coupled with the ability to develop software for demonstration purposes. Technical presentation skills need to be well developed, together with the ability to write technical material. We are looking for specialists in specific areas like **UNIX/XENIX, DATABASE, REAL-TIME APPLICATIONS AND NETWORKS.**

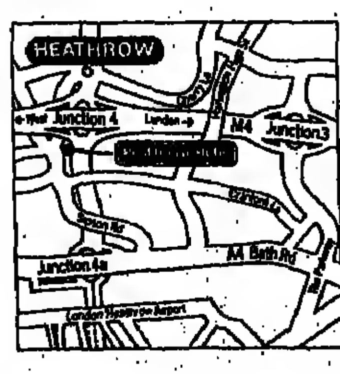
Our conditions of service match the excellence of our staff and products. Our benefits package is amongst the best in the industry and matches the high expectations we have of our employees – competitive salaries, non-contributory BUPA, life insurance, pension and stock participation plans, plus a generous relocation package where necessary.

COME ALONG AND DISCUSS THESE OPPORTUNITIES AT ONE OF OUR FORTHCOMING OPEN HOUSES:

AT MANCHESTER on 29 February at the EXCELSIOR HOTEL, MANCHESTER AIRPORT BETWEEN 12.00 midday and 9.00 p.m. TEL: 061 437 5811
AT HEATHROW on 1 March at the POST HOUSE HOTEL, off Junction 4 of the M4 BETWEEN 12.00 midday and 9.00 p.m. TEL: 01 759 2323

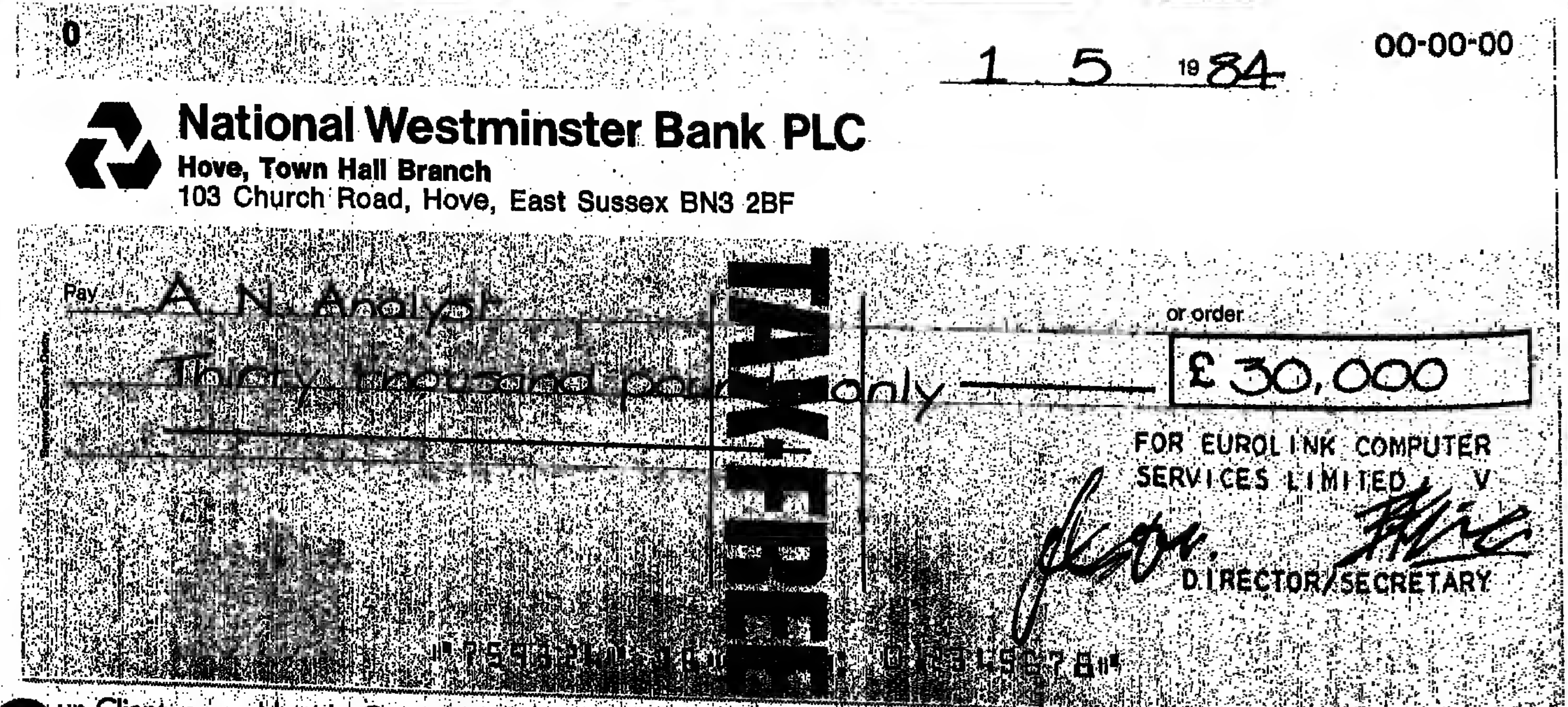
If you cannot make either of these venues, telephone for an application form, or send a copy of your C.V. to Don Street, European Systems Marketing Manager, or to Ray Withey, Personnel Manager.
INTEL INTERNATIONAL, PIPERS WAY, SWINDON, WILTSHIRE, SN3 1RJ. TEL: 0793 488388.

MANCHESTER AIRPORT
The Excelsior Hotel
Manchester International Airport Terminal Building



These Vacancies are open to Male and Female applicants.

BIG MONEY!!



0 1 5 1984 00-00-00

National Westminster Bank PLC
Hove, Town Hall Branch
103 Church Road, Hove, East Sussex BN3 2BF

Pay A. N. Analyst or order
Thirty thousand pounds only £30,000

TAX FREE

FOR EUROLINK COMPUTER SERVICES LIMITED
DIRECTOR/SECRETARY

⑈755821 16[illegible] 012345678⑈

Our Client, a world wide Company, requires for Saudi Arabia: Analyst/Programmers - Hardware and software specialists - Scientific Programmers - Seismic Programmers - Systems Programmers - Graphic Equipment Operators and Teacher Trainers with technical skills on one or more of the following: IBM, DEC, VAX, PDP, WANG, MICROS, TSO/SPF/IMS/DPC, COBOL, PLI, FORTRAN and an opportunity to learn new techniques and skills.

We offer: First class salaries - Paid Flights Home - First Class Accommodation - Use of company car - Active sports club - including swimming, sailing, indoor sport.

We offer single or married status and of course **BIG MONEY.**

Please telephone **NEILL SKIDMORE** our independent recruiter to allow him the opportunity to tell you about a life in the sun. **0273/202316**

EUROLINK
COMPUTER SERVICES LIMITED
EQUITY & LAW HOUSE, 102 QUEENS RD, BRIGHTON. BN1 3YF

---

system support representatives

are required by

apollo computer (uk) ltd.

to support an impressive expansion programme

Apollo Computer is an exciting company which designs, manufactures, sells and supports integrated hardware/software systems for the Technical Professional who is working in: Solids Modelling, Engineering Dreughting, I.C. Design, Finite Element Analysis, Numeric Control and other high technology applications. We require to fill positions based et Richmond, Berkhamsted, Sele and Glasgow. We are looking for high celibre staff and in return we offer a competitive remuneretive peckage including non-contributory benefits end e car.

As a Systems Support Representetive you will be responsible for supporting customer systems, both hardware and software; working in pre and post sales environments with meinframe power desktop computers having extensive and unique networking capebilities. You will require to have 3-5 years' experiance in this field, be quick to laarn, e self-starter and heve en appropriate degree of HND/HNC. If you feel you meet our requirements and heve the ebility to grow with us, please send your c.v. and accompanying letter to:

domain

Mrs. Catherine Voak
Personnel Administrator
Apollo Computer (U.K.) Ltd.
Bulbourne House
Gossoms End
Berkhamsted
Herts HP4 3LP

(7952)

ComputerWeekly
Britain's largest circulation computer journal

SPECIAL RECRUITMENT FEATURE

March 8 Issue

OPPORTUNITIES IN THE MIDLANDS

You naturally demand the most from your computer hardware and that means you need professional staff with the necessary database experience to make sure your system works best for your business.

If you are currently recruiting professional dp staff, then the March 8 issue of Computer Weekly provides an added bonus to help you find the people you are looking for. Our special feature, highlighting the wide range of opportunities for dp staff in the Midlands, will create an ideal platform for you to spell out the advantages of working for your organisation.

This is just one of many career-linked features to be published during 1984; Our aim is to talk to individual groups of readers, both as employees and as people with particular skills and problems and is just one indication of Computer Weekly's commitment to providing the platform needed by recruitment advertisers when seeking staff.

Computer Weekly is Britain's largest circulation computer journal and continues to offer the best guarantee anywhere of coverage of today's computer-skilled professionals. Equally important is Computer Weekly's dominance of the key job-moving categories. More than ever before, coverage exceeds all other journals in the market.

To reserve space in the MIDLANDS FEATURE 'phone (01) 661 8080 today. Copy deadline is Monday March 5

[illegible]

Classified Department, Quadrant House, The Quadrant, Sutton, Surrey, SM2 5AS

ComputerWeekly

The Power of Observation

Software Sciences is at the leading edge in developing radar software; setting the pace with complex high integrity, high availability real-time systems. Powerful radar is essential to operational systems in civilian and military air traffic control, marine navigation and weather radar processing in all of which we are established on an international level.

We are seeking candidates with a good education and a sound background in real-time systems design. Projects currently under development include civilian and military air traffic control and weather data processing systems specific application areas include:

- signal processing
- tracking algorithms
- radar data processing
- flight plan information systems
- data base systems

Depending on experience areas of responsibility will include, software design, systems design, team leadership and project management. Experience of one or more of the following machines, DEC PDP11, VAX, Texas Instruments Hewlett Packard or special purpose hardware and interfaces is highly desirable.

Although based at Farnborough, Hants, candidates should be mobile as visits to client sites may be necessary.

In return we offer an excellent salary, a wide range of company benefits and assistance with relocation where appropriate.

For further information and an application form, please telephone our consultant Francesca Drinkwater or simply clip and return the coupon below.

SOFTWARE SCIENCES

D.P. Recruitment
SERVICES LIMITED
FREEPOST, LONDON W5 2BR TEL 01-567 5501 (24 hr./ ansaphone)

NAME
ADDRESS
HOME TEL
WORK TEL

SS001

VAX Opportunities

North West

To maintain its dominant position in its own area of retail distribution, this Organisation is rapidly moving towards a leading position amongst high technology users. The present development program provides exciting opportunities for ambitious computer professionals to work with the latest equipment in a dynamic environment.

Senior Analyst/Programmer
up to £12,500

Rapid growth in completely new application areas has created this exceptional opportunity for a mature computer professional. The successful applicant will join a small but expanding team to work on future projects in the warehousing and distribution areas. He/she will already have a proven track record of the successful design and implementation of commercial systems in similar areas. Experience of the VAX machine is essential, preferably with experience of VAX/VMS and VAX/DBMS.

Planned projects make promotional opportunities certain and the successful applicant must, therefore, demonstrate that he/she will be ready to lead a team in the near future. (Assistance with relocation available).

Analyst Programmer
up to £9,000

For this position, 2 to 3 years experience of minis is required, ideally, but not essentially, to have included some exposure to VAX hardware, with sound fluency in COBOL. This position is ideal for a self-motivated Candidate who seeks career progression working with "state of the art" technology. Planned growth is extensive enough to make promotion opportunities certain, therefore some potential for leadership in the applicant would be welcome.

To take the first step to a secure and rewarding future, contact **JIM SMITHAM** on **061-833 0427** (24 Hour Answering Service) or 061 439 2679 (Evenings and Weekends between 7 p.m. and 9.30 p.m.).

Technical, Sales & Management Appointments

Specialist Computer Recruitment Ltd

SOUTH
James House, 46 James Street,
London W1M 5HS
01-935 0871/486 0461

MIDLANDS & INTERNATIONAL
35-37 Great Charles Street,
Queensway, Birmingham B3 3JY
021-236 3781

NORTH
International House, 84 Deansgate,
Manchester M3 3EE
061-833 0427

BELGIUM
Avenue Louise 327,
Boite 4, 1050 Bruxelles
010 322-640 7161/71

HOLLAND
Willemsparkweg 92,
1071 H.M. Amsterdam
010 3120-790847

An ideal opportunity for SOFTWARE/HARDWARE ENGINEERS to move into TECHNICAL SALES SUPPORT

Up to £15,000 + 2 litre car

Graphics systems have come a long way since drawings first came off the drawing board and into the computer. The latest colour graphics systems show a degree of sophistication and versatility that make them equally at home in an up front defence environment or in a fashion house.

Our client is part of a major international organisation, manufacturing and marketing a range of 'state of the art' plotting and graphics systems for use in all aspects of modern industry. They already hold a large share of the market and wish to further expand their already wide applications in an under-exploited market place.

This is where you come in. We are seeking two self motivated individuals to join a small sales support team involved in all pre-sales activities. Your role will be to advise customers on the various software applications packages and hardware configurations as well as carry out demonstrations, training and running benchmarks.

These are key positions and successful candidates are likely to have extensive experience with DEC or IBM systems and may have some knowledge of remote or graphics applications. Communications skills are also extremely important because of the high level of customer contact.

The company is based in Berkshire and full product training will be given in the UK and California. Conditions of service are excellent and reflect those of a large international company including medical, bonus and pension scheme.

If you think you have the skills and initiative to join our client at the frontiers of graphics and plotting systems applications, contact Val Abi on Reading (0734) 509151.

(7812)

Kirby Professional

Kirby Professional Recruitment Limited 24-26 Queens Road, Reading, Berks. RG1 4AU Telephone: Reading (0734) 509151

SUCCESS
THROUGH
RESULTS

COMPUVAC

MAAPICS ALL LEVELS — TO £20,000

We currently have a very high demand for experienced System 34 and/or System 38 professionals with a good knowledge of MAAPICS. Vacancies are at all levels from Programmer through to Senior Consultancy roles, some positions offer RPG3 training. MB/CW

RPG2 – MOVE INTO BANKING — c.£12,000 + MORTGAGE

Our client is looking for an ambitious RPG2 Programmer who is keen to move into the challenging world of banking systems. Full training in this area will be provided, you will also have the opportunity to work on other minis and IBM PCs. MB/CW

RETRAIN TO RPG3 – HOME COUNTIES — £10,000 to £16,000 (NEG)

A rapidly expanding manufacturing end-user are looking for two Analyst/Programmers with either RPG2 or RPG3 experience to work on their newly installed System 38. Career prospects are excellent and challenging development projects await the new recruits. MB/CW

IBM COBOL PROGRAMMERS — TO £11,000

A number of our clients based in the London area require Programmers with approximately two years' commercial experience. Ideally, you will have sound COBOL experience together with some knowledge of CICS and/or DL1, although COBOL is the only necessity. LD/CW

IBM ANALYST PROGRAMMERS — TO £13,000

We urgently require experienced Analyst Programmers, with preferably two years' programming experience coupled with a year in an Analysis environment. Language experience should include COBOL, PL1 or ASSEMBLER and you will probably have seen a project from feasibility through to implementation. RC/CW

CICS/DL1 PROGRAMMERS — TO £12,000

Three major clients are looking for experienced CICS Programmers. Candidates should be well versed in COBOL or PL1 programming, and have at least one year's practical experience of working on CICS systems as well as exposure to DL1. LD/CW

IBM SYSTEMS PROGRAMMERS — £10,000 TO £18,000 + BENEFITS

If you have at least two years' experience as a Systems Programmer on IBM DOS/VSE or MVS systems, we would like to hear from you. A good understanding of IBM mainframes is essential and exposure to CICS, IMS, TSO, VTAM, etc, is highly desirable. Positions are based in and around the London area. RC/CW

IBM SYSTEMS ANALYSTS — £12,000 TO £16,000

A number of large IBM users require Analysts with two-four years' analysis experience gained in a financial or commercial environment. Experience of DOS/VSE or MVS Systems is essential and you should have first hand experience of designing and implementing systems. LD/CW

PL1 PROGRAMMERS — TO £11,500

We currently have a requirement for experienced PL1 Programmers to work in development areas. Candidates must have 18 months' PL1 programming experience together with a knowledge of some of the following: CICS, IDMS, TSO, etc. Any on-line experience would be a distinct advantage. RC/CW

CPS
RECRUITMENT CONSULTANTS

TELEPHONE
253 5042
10 LINES (24 HOURS)
OR **250 0456**

COMPUVAC HOUSE
121-125 City Road, London, E.C.1
(NEXT TO OLD STREET TUBE EXIT 1) OR SEND C.V. TO
COMPUVAC FREEPOST EC1B 1EN

(7985)

Real Time Software Specialists

Farnborough, Hants.

To £13K

Real Time Developments is an independent systems house specialising in high-quality real-time software systems. We have an immediate requirement for a number of real-time software specialists to enable us to expand in line with our plans for 1984.

The people we are looking for are preferably graduates with two or more years experience in any real-time applications. Experience should have been gained on minis or micros, with knowledge of both assembler and high-level languages.

Apart from a highly competitive salary, benefits include BUPA, health assurance and paid overtime. The company offers ample scope for genuine career advancement, with employees being encouraged to assume responsibility as soon as they are ready for it.

1984 holds great promise for RTD; why not be part of our success story? For more details contact Geoff Burnes on Farnborough (0252) 546213 or write to

rtd

Real Time Developments Ltd.,
Lynchford House, Lynchford Lane,
Farnborough, Hampshire, GU14 6JA.

Jeff via Tip

SENIOR ANALYST PROGRAMMER

SYSTEMS 38 — CITY

c.£15,000

ANGLO EUROPEAN CONTAINER LINE is a leading ship management and liner agency based in the City of London.

The company utilises System 38 hardware with links to four remote office locations throughout the UK, running Liner Agency Accounts, Container Tracking, Telex and Word Processing packages.

Future development plans include the computerisation of liner operations, ship accounting systems and the installation of direct links to ships.

To ensure successful completion of these projects, we have been retained to assist in the recruitment of a Senior Analyst Programmer able to define and implement the new systems with initiative, maturity, personal authority and stamina. Exposure to System 38 RPGIII is essential.

For further details of this genuinely challenging position offering a high degree of responsibility and involvement together with opportunities for occasional foreign travel please contact MELVYN DEARLOVE at Computer Two Thousand.

Computer Two Thousand Ltd.
Data Processing Consultants
217-218 Tottenham Court Road
London W1P 9AF

(7874)

2000 C

Tel: 01-636 7584 (24-hrs)

Sloangate–the register you can believe in

☐ Sales Managers/Executives
☐ Applications Engineers
☐ Analyst Programmers
☐ Senior Programmers
☐ Systems Programmers
☐ Technical Support
☐ Software Support
☐ Hardware Engineers
☐ Systems Engineers
☐ Service Engineers
☐ Software Engineers
☐ Technical Authors
☐ Design Consultants
☐ Project Leaders
☐ Project Managers
☐ Systems Analysts
☐ Programmers
☐ Consultants

Cut yourself out a piece of the action

☐ More Advertising
☐ More Candidates
☐ More Clients
☐ More Vacancies
Quality *and* Quantity

Career profile

Sloangate
The Appointments Register

CW06 For office use only

Sloangate Limited
Dominic House
171-177 London Road
Kingston-upon-Thames
Surrey KT2 6RA
Telephone 01 549 9236
Telex 918417 STARAO G
Licence number SE6901

BACKGROUND INFORMATION PLEASE READ CAREFULLY AND PRINT IN BLOCK CAPITALS USING BLACK OR RED INK
SURNAME FORENAMES AGE
ADDRESS
TELEPHONE HOME TELEPHONE OFFICE
NATIONALITY MARRIED ☐ SINGLE ☐ CHILDREN (WITH AGES)
SCHOOL FROM TO
EXAMS PASSED
UNIVERSITY ☐ COLLEGE ☐ OTHER ☐ FROM TO
DEGREE ☐ DIPLOMA ☐ CERTIFICATE ☐ CLASS
SUBJECT(S)
PROFESSIONAL QUALIFICATIONS WITH DATES
LANGUAGES (FLUENT/SPOKEN)

YOUR FUTURE PLANS
DESCRIBE THE APPOINTMENT YOU NOW SEEK
INDICATE WHERE IN THE UK YOU WILL NOT WORK
WILL YOU WORK ABROAD YES ☐ NO ☐ SALARY REQUIRED
WILL YOU TRAVEL IN THE UK YES ☐ NO ☐ ABROAD YES ☐ NO ☐ DRIVING LICENCE YES ☐ NO ☐
ON SINGLE STATUS YES ☐ NO ☐

COMPUTER EXPERIENCE STATE NUMBER OF YEARS EXPERIENCE IN EACH OF THE FOLLOWING
COMPUTER LANGUAGES
MACHINES USED
APPLICATIONS OPERATING SYSTEMS

PRESENT EMPLOYMENT
EMPLOYERS NAME
ADDRESS
JOBS HELD FROM
JOB RESPONSIBILITIES EMPLOYERS BUSINESS
SALARY COMMISSIONS/BONUS FRINGE BENEFITS
IF YOU ARE NOT A UK CITIZEN PLEASE SPECIFY DOCUMENTS STATING NUMBER WHICH ENTITLES YOU TO WORK IN THE UK

EMPLOYMENT HISTORY LIST LAST TWO EMPLOYERS NOTICE
EMPLOYERS NAME
ADDRESS FROM
JOBS HELD EMPLOYERS BUSINESS TO
RESPONSIBILITIES LEAVING SALARY
EMPLOYERS NAME FROM
ADDRESS EMPLOYERS BUSINESS TO
JOBS HELD
RESPONSIBILITIES LEAVING SALARY

PROHIBITIONS LIST THE NAMES OF ANY COMPANIES WHICH YOU WOULD NOT LIKE US TO APPROACH
I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT SIGNED
ALL OUR CLIENTS ARE EQUAL OPPORTUNITY EMPLOYERS
HOW DID YOU HEAR OF SLOANGATE. IF BY ADVERTISEMENT PLEASE QUOTE REFERENCE.

Sloang
The Appointments Register

01-549 9236

Cincom Systems

Field Support Consultants to £15K + Car

You may be an experienced programmer or analyst programmer looking for that big break into customer support or even already in support and looking for an opportunity with a market leader. Your background will include:-

- **Applications experience**
- **Good IBM on-line and/or database experience.**
- **Experience of manufacturing systems will be advantageous.**

The position is field based, supporting specific accounts and will therefore demand presentable appearance and good interpersonal skills.

TIS
MANTIS

High technology products need superlative support. To maintain Cincom's reputation for excellence we are seeking to recruit additional support staff.

MRPS
TOTAL

Product Support Specialists to £15K + Car

Further opportunities exist to complement the expanding product support group, providing problem solving expertise, often at assembler level, for assigned products. This is a young dynamic team and the position requires:-

- **2 years IBM assembler.**
- **Good IBM on-line and/or database experience.**
- **Excellent problem solving skills.**

Your background should include Mantis, Environ, Total, CICS or DL/1. Successful candidates, ideally graduates in a numerate subject, will need to be enthusiastic, self motivating and enjoy regular customer contact.

Excellence in Software Technology

Both positions are based in
MAIDENHEAD, BERKS

MCL

McCOURT COUSINS LTD.
Computer Recruitment Consultancy

For further details please telephone Keith Taylor on Reading (0734) 595346 or write enclosing full c.v. to our Reading Office.

27-29 Greyfriars Road,
Reading, Berkshire
Telephone (0734) 595346 (24 hours)

Chesham House, 150 Regent Street,
London W1R 5FA
Telephone 01-439 6288

SYSTEMS DEVELOPMENT MANAGER
IBM 34 SITE
Circa £11,000 plus Bonus

We are seeking an experienced analyst programmer with an IBM 34 background to head our computer department in developing our systems into a first-class information service. The introduction of a System 38 is currently under consideration. The ability to liaise with user departments is of vital importance and a knowledge of MAAPICS would be desirable.

Applications with full c.v. to **The Personnel Manager, F. Francis & Sons Ltd., 50-62 Blackheath Road, London SE10 8DH. Tel: 01-692 7191.**

(7991)

FOR
CLASSIFIED
ADVERTISING USE
DIRECT LINES

RECRUITMENT CONSULTANCIES
(01) 661 8787

DIRECT ADVERTISERS
(01) 661 8080

★ TRAIN IN USA ★
CUSTOMER ENGINEERING

Leading multinational manufacturer, secure and fastgrowing, seeks keen young Engineers to train on special systems and advanced techniques. Sound electronic background essential – disk experience a bonus. Excellent training (US/Europe/UK). Benefits include realistic salaries (£6½-8½K+car, o/t, etc.), friendly management ensures career enhancement, regular reviews, etc. Opportunities NOW in London, Home Counties, Midlands and North West. OTHER OPPORTUNITIES: Engineers with exp. of DEC/DG/P-Elmer/lookalikes, etc. for London/Home Counties; and Data Comms exp. for E Anglia.

Whatever your requirement – expand your career NOW – RING MIKE HILL ON 01-549 6441 (Office) or 01-394 2369 (outside office hours and weekends, etc).

ab executive (kingston) ltd 01-549 6441 (24 hrs)

هكذا من الأصل

CAREER OPPORTUNITIES
FOR
SYSTEMS PROFESSIONALS
10k-18k

Powell Duffryn Systems Ltd, part of a large international group are seeking additional senior staff to support their continued growth, who will take responsibility for the development and implementation of interactive systems for clients in the industrial sector.

PROJECT CONSULTANTS

You will have a minimum of eight years data processing experience and must have taken full responsibility for a significant interactive system from conception to implementation. A professional committed approach to the implementation of projects within budget is essential. A degree of professional qualification would be an advantage as would experience in a manufacturing or acounting environment.

PROGRAMMING TEAM LEADERS

You will have a minimum of four years data processing experience including at least one year in a supervisory role. You will be expected to take full responsibility for the scheduling, quality control and performance to timescale and budget of the staff under your control. The systems being developed are substantial and make use of data base and data dictionary techniques. The main programming language use is COBOL, with on-line development facilities supported by dedicated VAX computers.

SYSTEMS ANALYSTS

You will have a minimum of four years data processing experience and will be able to demonstrate positive achievement in that period. Your role in a project team will be varied and involve close liaison with clients.

SYSTEMS SUPPORT PROGRAMMERS

Your experience in data processing will not be substantial but will have involved use of assembler languages. Systems supported will be based on the VAX range of computers and UNIX based machines.

Salaries are competitive and there is a company car scheme for certain positions

To apply, please send full cv to: **R. M. Hall**

POWELL DUFFRYN SYSTEMS LIMITED
Faraday Road, Daneshill West
Basingstoke, Hants, RG24 0LH
Telephone Basingstoke 51821

(7804)

PL/I ALL LEVELS!
To £12,000

We have numerous clients in London and the home counties who require experienced IBM PL/I personnel ranging from Programmers to Analyst/Programmers. The minimum requirement for programmers is 12 months' PL/I experience and for Analyst/Programmers proven analytical skills. The companies range from small software houses to large inhouse installations and offer a wide variety of prospects and benefits. GW/6780

12 MONTHS' IBM COBOL?
SURREY To £9,000

An opportunity has arisen for a programmer with a minimum of 12 months' IBM Cobol to join this leading financial group based in the heart of Surrey. The company have recently installed an IBM 4341 running under DOS/VSE. You will be part of a small team developing on-line database systems. Your CICS and DL/I experience would be an added advantage although training will be offered. The position carries benefits normally associated with a large leading company. GW/4285

RPG III/FINANCE
CITY £10-12K

Continued D.P expansion and the upgrade from IBM System 34 to System 38 has created a new requirement for an IBM System 38 RPG III Programmer/Analyst. This is an expanding department therefore the candidate appointed can expect career progression. Working conditions are excellent coupled with a full banking package which includes subsidised mortgage, yearly bonus and restaurant facilities. To discuss this position further please contact me as soon as possible. CW/4288

MOVE INTO MANAGEMENT
CENTRAL LONDON To £14,000

This is an ideal opportunity for a competent Analyst/Programmer to move into a management position. Initially the main emphasis of the job will be the implementation of new systems. The requirements for this position are three years' programming, design and analysis experience using RPG II with indepth knowledge of the IBM System 34. If you feel confident about meeting this position then phone immediately for further details. GW/4301

HEWLETT PACKARD – COBOL
£10,500 + Relocation

My client based in Herts is a leading manufacturer of chemical products in the UK. They run a network of HP3000 computers and are currently embarking upon the development of local systems. These will include stock control, ledgers, distribution, etc. They now require Analyst/Programmers with 12 months' + COBOL experience and a knowledge of the HP3000 machines. There will be much analysis and user liaison involvement. An excellent salary is offered, combined with a profit share scheme, non-contributory pension, sports and social club, and relocation assistance. HW/4153

PICK ALL LEVELS
To £14,000

Presently I have several excellent openings within London and the Home Counties for individuals whose experience is gained largely or exclusively on Pick-based Software. Insurance companies, software houses, household names and many others offering technically interesting, challenging and stable career openings to those with relevant backgrounds. If you are looking for a new opportunity call now for a confidential discussion or send a current c.v. to the address below. MW/2742

UNIX
CITY £12,500

My client, part of an International banking group require an experienced programmer for their D.P expansion plans. This will be a challenging appointment with an organisation dedicated to making the best use of their sophisticated programming facilities. A thorough knowledge of Unix is essential on any machine and experience in a financial environment would be an asset. All banking benefits apply. MW/4296

DATAPOINT
BERKSHIRE £9,000

As part of their continued expansion this International organisation would be interested in receiving applications from programmers with at least 18 months' recent exposure to Databus. The company can offer excellent working conditions and a stimulating environment with promotion prospects for the right candidates. Possibility of travel within UK and abroad if desired. MW/4248

MICRO PROGRAMMER/ ANALYST
SURREY £12,500

Outstanding opportunity to join this well-established software house at the onset of their micro development plans. The ideal candidate will be prepared to play a major role in these developments having worked in a micro environment for a minimum of 18 months with a thorough knowledge of CP/M systems and D/base II. In return the company can offer an excellent career path and 1st class benefits. MW/4158

ICL 2900 COBOL PROGRAMMERS
MIDDLESEX £8,500 to £10,500

A number of interesting opportunities have arisen for experienced commercial programmers to join this expanding computer department. The company is one of the most successful in the export business. They utilise ICL 2900 kit running under VME. The senior position is open to a programmer who must also have had supervisory experience, and both positions require a knowledge of structured programming. If you have a dynamic and progressive personality and are looking to develop your skills, this position will be of great interest to you. EW/4302

ICL PROGRAMMERS
RURAL SOUTH £7,000-£11,000

More and more companies are moving to the Silicon Valley of the South, due to expansion. At the moment I have two companies recruiting a number of programmers at most levels. The junior position requires 18 months' good COBOL experience in an ICL environment and they offer training to the right applicant in TPS. The more senior position requires a knowledge of VME/B and on-line projects. In return both companies offer an excellent career path and all large company benefits. EW/4128

MVS/COBOL
CITY To £12,000

Leading financial concern in the city has recently embarked on a new venture that will require the setting up of a new team. Two years + IBM OS or MVS COBOL is essential, whilst CICS would be advantageous. Training can be provided in DL/I, and structured programming techniques, and there will be every opportunity to strengthen your analysis. Benefits could include a mortgage. CW/4138

IBM SYSTEM 38
MIDDLESEX To £11,000

Three clients in the engineering, manufacturing and retail trades are seeking programmer/analysts to join their development teams. 12 months' + IBM System 38/RPG III is required, although candidates with two years + RPG II would be favourably considered for retraining. If you would like more involvement, and a better salary please contact me now. CW/5306

HONEYWELL SENIOR
£12,000

A company who are a major name in the field of design and graphic equipment, are expanding their D.P department and are looking to recruit an additional member to lead a small team. They utilise a Honeywell Level 64/DPS6 with COBOL. Experience of designing and implementing at least one major project from concept to completion is required along with good communication skills. They offer normal large company benefits and relocation expenses where applicable.

ICL ANALYST/PROGRAMMER FOR THE SOUTH WEST
c£11,000

The company are involved in several exciting new development projects and require a number of talented professionals to enhance their friendly team. They run dual ICL 2966 and ME29 and a number of microcomputers. If you have experience of COBOL VME, IDMS, DDS or TPMS at any level, and wish to work in a department offering genuine development opportunities; and you would like to further your career, give me a call now. EW/4094

PDP – VAX – RETRAIN!!
To £12,500

Retraining is offered to Programmers and Analyst/Programmers with over 12 months' DEC/PDP experience – and at least one of the following COBOL, BASIC+/+2, DIBOL, MUMPS. If you are ambitious and looking to work with VAX machines, then my Middlesex-based client will be interested in you. As a part of this leading software team the successful applicant will be dealing with a wide variety of clients and applications from financial to commercial. Analysis involvement is encouraged. HW/4300

HEWLETT PACKARD – SENIOR
To £14,000

Do you have five years + D.P. experience, combined with at least one year's involvement on HP3000 machines? My client can offer you a similar position within their close knit and highly successful D.P. department. The appointed candidate will be expected to liaise with senior management and will have responsibility for major development projects. The company use the latest D.P. technology and HP utilities and are dedicated to computerisation. It is envisaged that the post will lead to board management within a year. I also have similar posts in Berkshire, West London, Hertfordshire and Scotland. HW/4087

DOS/VSE COBOL
BERKSHIRE £8-£13,000

I have four companies in the Berkshire area currently seeking programmers up to Team Leader level. The more junior posts require 18 months' + IBM DOS/VSE COBOL and the Team Leader should have five years + similar experience with some supervisory skills, and the ability to motivate and control staff. Please call me for details of these excellent opportunities. CW/4038

ANALYST/PROGRAMMER
MIDDLESEX To £12,500

Two years + IBM COBOL in a DOS/VSE or MVS environment, with some CICS experience essential. My client, part of a world-wide organisation, needs a competent analyst/programmer who can communicate effectively with users, and is keen to extend their analysis skills in an on-line and database environment. Excellent large company benefits. CW/4216

IBM SENIOR PROGRAMMER
EAST LONDON/ESSEX £NEG

If you have around four years' IBM COBOL experience with some CICS knowledge and are looking for a stimulating career in a commercial environment, this company will develop your analytical skills. They are also looking for IBM COBOL programmers with one-two years' experience. Training can be provided in CICS and database techniques. AW/4194

IBM SYSTEMS PROGRAMMER
LONDON To £14,000 + BONUS

An international financial organisation have an urgent need for a systems programmer with a minimum of two years' experience working in an on-line environment using MVS, TSO, CICS, IMS/DB and JES2. Knowledge of DOS/VSE an advantage. Senior systems people are also required with a rising salary according to experience. AW/4144

RPG III PROGRAMMER
NORTH WEST LONDON £10,000

A manufacturing company just outside London are looking for RPG III programmers with a minimum of one year's experience, preferably using MAAPICS. However they will consider good RPG II people to retrain on to the IBM System 38. AW/4289

RPG II ANALYST/PROGRAMMER
CENTRAL LONDON £11,000

A large export/import company in London are looking for analyst/programmers with three years' RPG II experience and a financial/accounts background. The projects are interesting and involved, and will be a mixture of development and support work in a small team environment. AW/4255

DEC – PROGRAMMERS AND ANALYSTS
£FIVE FIGURES!!!

This major London-based finance organisation is currently embarking on several large development projects and is seeking programmers and seniors to play key roles. A background in DEC/BASIC+/+2 is essential – you will be working with the latest VAX/VMS machines. The systems are challenging and will involve the successful applicant in user liaison/analysis. At the senior level, promotion into management would be a natural progression for financial systems analysis. Besides an excellent salary, a large half yearly bonus is offered. HW/0202

Brushfield House, 12 Brushfield Street
Bishopsgate, London E1 6AN
Telephone: 01-247 3356 (24 Hours)

ENGLEDOWN

COMPUTER PERSONNEL CONSULTANT

(7673)

HONEYWELL PROGRAMMER
NEW POSITION – NEW SYSTEM DPS 7 COMPUTER
MEDICAL INSURANCE AGENCY – MAJOR INSURANCE BROKERS

We are looking for an ambitious programmer to join our computer team who are developing a new database client accounting and information system. You should have up to two years' experience on Honeywell equipment ideally on L64 or DPS 7 hardware, using GCOS, COBOL, IDS2 and TDS. You will join a small team where everyone gets involved, so personality as well as the skills you can offer is important.

This could well be your first job move – in the RIGHT DIRECTION! INTERESTED? Ring or write to: **Peter Barnes, Medical Insurance Agency Ltd., B.M.A. House, Tavistock Square, London WC1H 9JD. Day 01-388 1301. Evening (7-9 pm) 0727 57641.**

PROGRAMMER
c.£9,000

Derwent Publications, a company at the forefront of scientific and patents information services and with a world-wide clientele, have a vacancy for an enthusiastic and innovative young programmer.

The successful candidate will be of at least 'A' level standard with about four years' commercial experience (or a graduate with two years' experience) of IBM/COBOL with MVS and TSO/SPF. Tasks will include assisting in the development of new project work, maintenance and support of existing applications and considerable liaison with external bureaux.

A competitive sterling salary (neg. a.a.e.) will be paid and there is a range of other benefits. Career prospects are good in an expanding and increasingly important department of a flourishing business.

Write with full c.v. to:

Mr V. Lyon
Personnel Director
Derwent Publications Ltd
Rochdale House
128 Theobalds Road
LONDON WC1X 8RP

Shift Control Officer

CARDIFF up to £15,000

Marketing and distributing gas throughout Wales is a large and complex operation, and computer services are making an increasingly important contribution. Wales Gas are now looking for a Shift Control Officer to supervise and control a computer operating shift on a rota basis.

Located in prestigious purpose-built accommodation in the centre of Cardiff, our installation consists of dual ICL 2966 processors, GTS tape decks, FDS640, FDS160 and EDS[illegible] disc units, LP 1500's and NPS front end processors.

This is a key management position with specific responsibility for setting work priorities; providing operational support in respect of hardware, software and application programme malfunctions; monitoring throughput against schedules; maintaining operating standards; user liaison; training shift personnel and participating in the implementation of new hardware. We operate a 24 hour, five day week and you will be required to work appropriate shift patterns.

Applicants, male or female, must have ICL VME 2900 operating experience together with at least seven years' in computer operations including two years at supervisory level. You are likely to be at graduate level but more importantly have well developed leadership and organisational skills.

Starting salary is £13,000, including shift allowance, rising to £15,000. Benefits are those normally associated with a large successful organisation and include relocation assistance where appropriate.

To find out more, ring Ian Campbell on (0222) 33131 ext. 3490, or apply in writing, quoting ref H45/86 to: Graham Moore, Senior Personnel Officer, Wales Gas, Helmont House, Churchill Way, Cardiff CF1 4NB.

WALES GAS
NWY CYMRU

PHILLIPS
PETROLEUM
66

DEVELOPING RESOURCES NATURALLY

In more than 20 countries around the world Phillips Petroleum is exploring for oil and gas, and is at the forefront of the search for new sources of energy. In addition to the company's world wide exploration activities it is also a major producer of petrochemical products ranging from chemicals to fertilizers.

Phillips Petroleum Europe Africa is responsible for the Group's interests within the UK where it has significant developments in the North Sea – and Africa where it has production sites off the Ivory Coast. A key element in the development and support of the Group's activities world wide has been in data processing and within its new London headquarters is based the DP centre for the Europe Africa operation.

To help keep pace with their immediate and future developments they now offer the opportunity to join them to work on a range of diverse applications from engineering to marketing and at the same time broaden your horizons within a professional and innovative environment.

Their computing facility is sophisticated with dual IBM MVS JES3 based mainframes utilising CICS/DLI, IMS, TSO linked to a world wide telecommunications network. Whilst COBOL is the main development language extensive use is made of the fourth generation language FOCUS. Working within project teams engaged in developing and supporting a comprehensive range of systems you will also be closely associated with the needs of the end users.

IBM COBOL PROGRAMMERS to £11k

A chance to develop yourself personally and professionally within a progressive environment, and the scope to liaise with users. We require a minimum of 18 months experience, fluency in COBOL ideally OS or MVS orientated with some experience of CICS.

ANALYST PROGRAMMERS to £13.5k

An opportunity to build on your programming background by becoming more deeply involved with the investigation and support of user-department needs and for supporting the development cycles to implementation. You should have had at least 3 years experience with a solid COBOL programming background and proven ability in CICS. Experience of user contact at analyst level and knowledge of VSAM or DLI is advantageous.

TEAM LEADER/DESIGNER to £15k

You'll play a key role in leading and steering teams of varying sizes blending a strong technical background with good communication and motivational skills.

You will have the proven ability in designing CICS based systems and will have played a key role in at least one major systems implementation.

A solid IBM COBOL programming background and VSAM combined with successful team leading experience is essential. Experience of DLI is advantageous.

***Emphasise development in your career – call* Hugh Macer or Rod Mackenzie on 01-734 9723 up to 7 pm or evenings and weekends on 0279 419156.**

[illegible]

CTR Computer Technology Recruitment Limited • Triumph House, 189 Regent Street, London W1R 7WD.

CONTRACTS

COMAC NORTH

IBM 8100 DPPX-COBOL PROGRAMMERS – APRIL
ICL IDMS DESIGNER
ICL DRS PASCAL C COMMS PROGRAMMER
ICL DRS BUSINESS CONSULTANT
HONEYWELL DPS8/ICL/DRS BUSINESS CONSULTANT
COMMS CONSULTANT X 25 DMI DISTRIBUTED TP/DATABASE
1 X P M SUPERDUAL 2988 DMI IDMS TPMS OSLAND X25 QUICKBUILD
1 X CONSULTANT IDMS APPLICATIONS DISTRIBUTED TP DATABASE
MUMPS PROGRAMMERS
HONEYWELL/IBM CONVERSION ASSEMBLER PROGRAMMERS – PARIS

Norfolk House,
Congleton Road,
Sandbach, Cheshire.
Telephone Sandbach
(09367) 4013

COMAC SOUTH

ICL

ICL 2800 IDMS/SCL ANALYST PROGRAMMER
ICL 2900 TPMS CONSULTANT
ICL 2800 VME IDMS TPMS COBOL ANALYST PROGRAMMERS
ICL TPMS IDMS PROJECT MANAGER
ICL ME29 TME SENIOR ANALYST/PROGRAMMER
ICL 2900 DME COBOL ANALYST/PROGRAMMER + PROGRAMMERS
ICL DRS VME DME PASCAL CIS COBOL ANALYST/PROGRAMMERS
ICL 2900 VME DME COBOL ANALYST/PROGRAMMERS
ICL 2900 VME IDMS ANALYST/PROGRAMMER
ICL DRS – CIS COBOL PROGRAMMER
ICL 2900 VME IDMS PROGRAMMER
ICL 2966 SYSTEM 4 DME VME COBOL PROGRAMMER
ICL DRS 20 PASCAL PROGRAMMERS
ICL SYSTEM 25 DMS3 COBOL PROGRAMMERS
ICL SYSTEM 25 SENIOR PROGRAMMER

IBM

IBM IMS DATABASE DESIGNERS – VARIOUS PROJECTS
IBM TSO/SPF COBOL PROGRAMMERS – URGENT
IBM 3081 IMS MVS COBOL SYSTEMS ANALYST
IBM MVS TSO/SPF FORTRAN PROGRAMMER/ANALYSTS
IBM DOS CMS CICS ADABAS COBOL PROGRAMMERS
IBM 34/38 CONVERSION PROGRAMMER – APRIL
IBM SYSTEM 38 MAAPICS RPGIII PROGRAMMER/ANALYSTS
IBM 8100 DPPX PROGRAMMERS
IBM 4341 – RPGII – PROGRAMMER
IBM IDMS ADS ON-LINE ANALYST PROGRAMMERS – VARIOUS

HEWLETT PACKARD

HP 3000 DP MANAGER – TWO YEARS
HP 1000 FORTRAN ANALYST PROGRAMMER
HP 3000 IMAGE VIEW COBOL PROGRAMMER/ANALYSTS

DATA GENERAL

DG RDOS ADS FORTRAN ANALYST PROGRAMMER
DG VS ADS COBOL PROGRAMMER

HONEYWELL

LEVEL 66 IDS1 TDS COBOL PROGRAMMERS
LEVEL 66 IDS2 DMIV IP COBOL PROGRAMMERS
LEVEL 6 SCREENWRITE PROGRAMMERS

WANG

WANG VS RPGII – ANALYST
WANG VS RPGII COBOL ANALYST/PROGRAMMERS

OTHER

DEC-DATATRIEVE-DESIGN ENGINEERS – URGENT
GEC 4000 BABBAGE RTL2
CMC REALITY PROGRAMMERS
SYSTIME RSTS BASIC+ PROGRAMMERS
PRIME COBOL SYSTEMS ANALYST
MOTOROLA 6800 – PROGRAMMERS
INTEL 8086 – PASCAL PROGRAMMERS
NCR VRX NEAT3 PROGRAMMERS
CORAL 66 PROGRAMMERS
PASCAL PROGRAMMERS
FORTRAN PROGRAMMERS
PERKIN ELMER – RELIANCE PROGRAMMER

TECHNICAL AUTHORS

CORAL 66
ICL

USA

THROUGH COMAC USA INC. IN MANHATTAN, WE HAVE FOLLOWING CONTRACTS:
BAL ASSEMBLER ON-LINE CICS – VARIOUS ASSIGNMENTS – MANHATTAN
UNIX C – NEW JERSEY
IBM 23 PCs AND IBM 38 – LONG ISLAND
IBM 30XX MVS CICS IDMS ADS ON-LINE COBOL – MANHATTAN
IDMS ADS ON-LINE – VARIOUS ASSIGNMENTS – MANHATTAN
IBM 4300 MVS CICS IDMS COBOL – HOGAN ESSENTIAL – MANHATTAN
VAX VMS COBOL/PASCAL – MANHATTAN
VAX VMS DECNET COMMS – MONEY TRANSFER EXP. – MANHATTAN
UNIVAC 1100 DMAS 1100 INTERNALIST – LONG ISLAND
TANDEM SYSTEM PROGRAMMERS AND ANALYST PROGRAMMERS REQUIRED WITH BANKING EXPERIENCE – FLORIDA

EUROPE

MICRO – CPM 86 ANALYST/PROGRAMMER – SWEDEN
HONEYWELL/IBM CONVERSION ASSEMBLER PROGRAMMERS – PARIS
IBM 4300 DOS/VSE VM CMS TOTAL MANTIS COBOL – ANALYSTS AND ANALYST/PROGRAMMERS – BRUSSELS
NIXDORF 8870 NIROS BUSINESS BASIC ANALYST/PROGRAMMERS – BRUSSELS
DEC PDP11 RSX11M SENIOR SYSTEMS PROGRAMMER – BRUSSELS
2900 DME OPERATOR – FRANCE

27 Town Centre, Hatfield,
Herts.
Telephone Hatfield
(07072) 65555

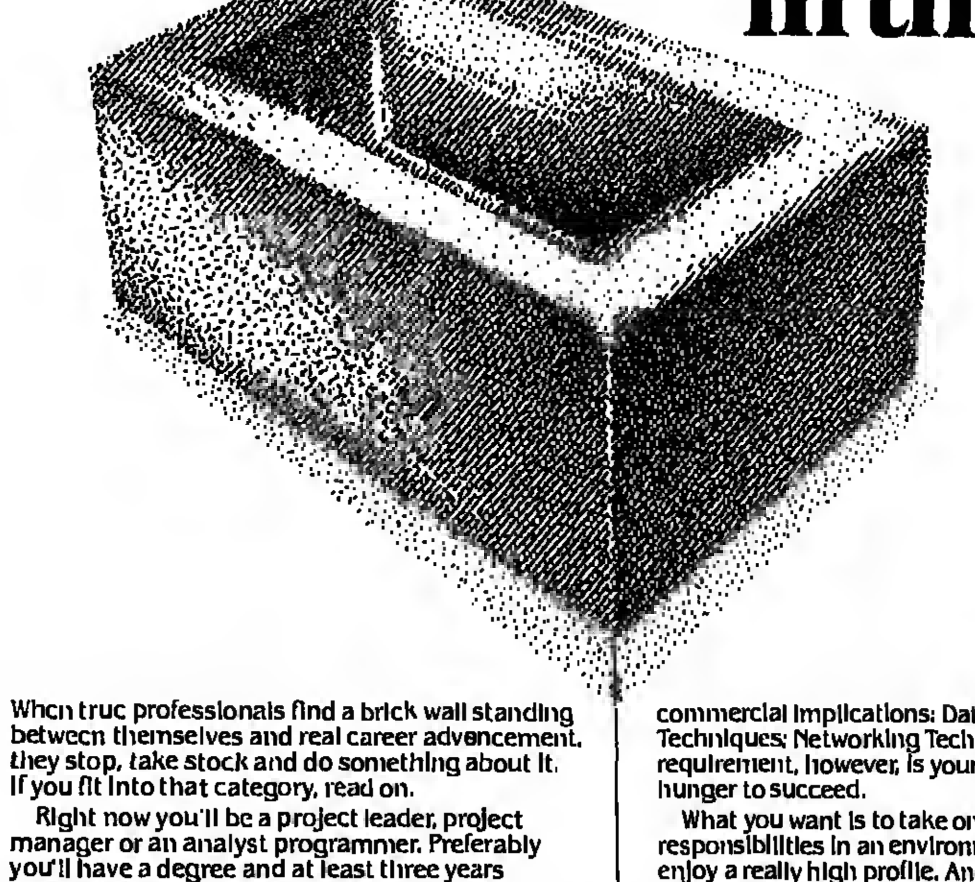
Comac
Comac

Comac Computer Appointments & Contracts Ltd

SAN FRANCISCO - LOS ANGELES - LONDON - AMSTERDAM - BRUSSELS - JEDDAH
THE Comac CONTRACT

(7987)

Guaranteed to stop professionals in their tracks



When true professionals find a brick wall standing between themselves and real career advancement, they stop, take stock and do something about it. If you fit into that category, read on.

Right now you'll be a project leader, project manager or an analyst programmer. Preferably you'll have a degree and at least three years experience in one or more of the following: In depth Systems Development experience (hopefully in a DEC environment); Office Automation and its commercial implications: Data Management Techniques; Networking Technology. Our essential requirement, however, is your determination and hunger to succeed.

What you want is to take on greater responsibilities in an environment where you'll enjoy a really high profile. And that's exactly what you'll get working at the heart of the **DIGITAL EQUIPMENT COMPANY** in Reading.

You'll be managing projects for Europe and the UK that will bring you into contact with virtually every business function of the corporation. That's why these opportunities exist only for people who can work under pressure and do a quality job at the same time. For those who have the ability, this is an opportunity to build yourself a career with unlimited potential.

DIGITAL EQUIPMENT COMPANY LIMITED is an equal opportunity employer offering highly competitive salaries and full relocation where necessary.

To find out more please clip the FREEPOST coupon or telephone the number below quoting reference 0810 and by return you will receive an application form and company profile.

By return of post, please send an application form and client company profile to:
Name:
Address:
Home tel. no:
Business tel. no:
(Used with discretion) 0810

0810

COMPUTASTAFF
FREEPOST, London SW1H 9BR. 01-222 6722. Telex: 894384.

DIGITAL EQUIPMENT COMPANY LIMITED

ANALYST/PROGRAMMER

BASIC **c.LONDON** **to £10,000**

We are recruiting for an International Mining Group with its UK and European headquarters based in Central London. This division alone produces a turnover of over £200 million p.a.

The data processing is currently based around a CMC Reality and a satellite link to a Prime 850 in Toronto backed up by the latest word processing systems. The Analyst/Programmer will have sole responsibility for the D.P. department as well as interfacing with the users to determine their computing needs.

Applicants should have a sound computing background with at least six months' Basic programming experience (CMC Data Basic would be of special interest) in order that they may maintain and enhance existing systems. A vital part of this position is the liaison with the in-house users producing "Ad Hoc" programmes from the totally integrated accounting system. Candidates with any communications experience or knowledge of word processing systems would be of particular relevance since the client places great importance on the development of these areas.

As well as an excellent starting salary a good benefits package is available.

For further details on this "Ground Floor" opportunity please contact Sean Orsler at Apex.

Apex Computer Recruitment Ltd.

(8024)

404 4821

Apex
59 Gray's Inn Road
London WC1X 8TL
Tel: 01-404 4821

IBM-Operations

City c £7,500 (inc S.A.)

International Commodities Clearing House Limited, provides essential financial services to the London commodity markets. Our clients expect and receive a high standard of service, and in order to achieve this we have developed sophisticated and reliable computer systems.

Our current configuration consists of twin 8MB IBM 4341 MODEL 12s and a 4MB 4341 MODEL 1, providing a Real Time system under VM/SP, DOS/VSE, POWER/VSE utilising CICS and BTAM. The current teleprocessing network consists of approximately 500 VDUs and teleprinters on 180 sites to which international links will be implemented shortly.

The installation is currently involved in a conversion to MVS and an IBM 4381 MODEL 2 is due to replace the 4341 MODEL 1 later this year.

To play a key part in these developments we now require **operators with at least 2 years' experience** of VM/CMS, DOS/VSE and CICS, and ideally a knowledge of MVS. We can offer an environment that is both stimulating and demanding to candidates who are prepared to work hard and are able to adapt to a constantly changing environment.

A 12-hour shift pattern is in operation over five days (with days off).

The remuneration package reflects our City success; a salary of c£7,500 (inc S.A.) and an attractive range of benefits that include: four weeks' holiday; mortgage subsidy scheme; non-contributory pension; l.v.s and lunch facilities; personal loan scheme; sports and social club.

For further information and an application form please contact:

Miss P. Burgess, Personnel Department,
ICCH Ltd., 6/8 Crutched Friars,
London EC3 Tel: 01-488 3200

ICCH
International Commodities Clearing House Limited

SYSTEMS ANALYSTS to £13,000
PROGRAMMERS to £10,500

IBM 3083, MVS/JES 2, CICS, TSO/SPF – EASYTRIEVE

Established in 1919, this British-owned electrical company based in North London is a modern day success story with group profits for 1983 reaching £13.3 million, an increase of over 50% on 1982.

Following their commitment to Computer Processing with a strong directional strategy to MIS, the company has recently upgraded to an IBM 3083 running MVS.

Parallel developments are required to utilise the power of the new hardware, including commercial online systems and piloting CAD systems within technical areas of the company. Series 1 configurations are also to be implemented at each manufacturing location.

These developments promise to create an exciting and challenging period within the computer services department and we have been retained to assist in the recruitment of highly skilled personnel to complement the existing team.

Applicants for the SYSTEMS ANALYST positions should possess solid Analysis experience gained in an IBM environment and should have taken a project from design through to implementation; exposure to online systems and database techniques is desirable. Successful candidates, who will be self-motivated individuals with the ability to communicate effectively at all levels, will be involved at all stages of systems project development covering Financial, Marketing or Manufacturing areas.

We are also seeking PROGRAMMERS to develop online and batch programs working as part of a project team assigned to a particular development area. A strong IBM COBOL background is the prime requirement for these positions. Although a knowledge of CICS, Database and/or EASYTRIEVE would be advantageous, both in-house and external training will be given where necessary.

In addition to a competitive salary and the opportunity to work in a progressive and demanding environment, the company offers a full range of benefits including Pension and Sick Pay schemes, Share Ownership Option, Saving Related Share Option, Subsidised Restaurant and five weeks' holiday.

For further details of these positions, please contact MELVYN DEARLOVE at Computer Two Thousand.

(8045)

Computer Two Thousand Ltd
Data Processing Consultants
217-218 Tottenham Court Road
London W1P 9AF

20
00

Tel: 01-636 7584 (24-hrs)

FIELD ENGINEERS U.K.

Major client requirements

MINIS – LONDON/OXON/E. ANGLIA/ SCOTLAND/S. COUNTIES	c.£11k + CAR
MICROS – All areas U.K.	c.£9k + CAR
W.P. – LONDON/H. COUNTIES	c.£8½k + CAR

All jobs provide ongoing training, good promotional prospects and excellent benefits.
RING TONY.

COMPUTER ENGINEERING SPECIALISTS (8030)

DEE EXECUTVE (AGY)
01-549 9251

URGENT ONE YEAR CONTRACTS

IBM DOS VSE PL/1 CICS
PROGRAMMERS X 3
MIDDLESEX

KPG
01-948 5922

CONTACT LORRAINE MADDISON
AT KPG OR TEL:
WALTON-ON-THAMES 245552
(evenings and weekends)

(8016)

The British Friesian Cattle Society, the largest breed society in Europe, providing some of the world's most sophisticated herd administration services to over 14,000 members in the United Kingdom and Republic of Ireland, requires an

ASSISTANT DEVELOPMENT PROGRAMMER

for the continued development of the Society's computer based research department. Processing is centred on twin ICL ME29 mainframes running under TME and supporting a network of local terminals, any of which can access nearly three million animal records. Software is written in Cobol, Fortran, RPGII and Plan.

The successful applicant should have been educated to at least degree or equivalent standard and have a background which combines elements of both practical dairying and using Fortran as a research tool.

The Society offers attractive conditions of employment, good rates of pay and, at age 25, pension scheme, free life assurance and permanent health benefits.

Closing date: March 8th, 1984

Applications in writing please to:-

Mr. A. D. Edwards
Personnel Executive
The British Friesian Cattle Society
of Great Britain and Ireland
Scotsbridge House
Rickmansworth, Herts WD3 3BB

No Agencies. (8035)

MARKETING MANAGERS
JOIN MICOM IN CALIFORNIA
$55,000≈ + Bonus + Stock Option

MICOM Systems Inc. designs, manufactures and markets a variety of micro computer based data communication products. Now a world leader, MICOM has achieved 100% p.a. sales growth in the last four years with an increase in turn over from $6 million to over $100 million. This impressive growth in both home and major international market results in four exciting opportunities for high calibre professionals.

You will lead a team of highly qualified engineers responsible for the market planning and management of one of the following key product areas.

VOICE/DATA MULTIPLEXING
- ★ Knowledge of voice PBX/data multiplexing
- ★ Technical marketing experience
- ★ Strong personnel/communication skills

PROTOCOL CONVERTERS (IBM)
- ★ Experience of IBM 3270 (either as user or designer)
- ★ Knowledge of access methods (VTAM, BTAM, etc.)
- ★ Familiarity with TSO, CICS etc.

PRODUCT DIRECTOR (MODEMS)
- ★ 5/7 years real experience in total product line management
- ★ Strong business/commercial expertise
- ★ Strong personnel/communication skills

DATA PABX PRODUCTS
- ★ 5 years in computer/communication industry
- ★ Specific experience in data PABX
- ★ Background in Planning & Technical marketing

Ideally you will be qualified to degree/equivalent level and will have a proven track record in data communications. These positions represent once in a lifetime opportunities to radically develop your career and lifestyle in one of the world's key locations within a tremendously successful organisation.
Contact: Shakeel Ahmed B.Sc.

Please telephone or write to Kramer Westfield International Ltd., 23 Victoria Street, Windsor, Berks. SL4 1HE. Windsor (07535) 56155 9.00 am to 7.00 pm.

Recruitment consultants to the data Communications Industry

Kramer Westfield
INTERNATIONAL

ASHFORD BOROUGH COUNCIL
Ashford/Shepway Joint Computer Unit

SENIOR SYSTEMS ANALYST

Grade PO1 1-5, Salary £[illegible] to £11,052 per annum

We require a Systems Analyst with at least two year's experience (including implementation of at least one major system) and a programming background to augment our small team developing and maintaining systems for two local authorities.

The unit runs a 1½ Mb ICL ME29/54 with some 60 terminals attached. Programs are written in Range COBOL and new development will be under TPS.

Experience in any of the following areas would be advantageous: ICL TME and utilities, TPS, COBOL structured programming, Local Government applications software. A knowledge of micro computers might also prove useful as development along these lines is proposed.

The location is at Ashford, a few minutes walk from main line railway station (London [illegible] minutes) and [illegible] miles from the coastal resort of Folkestone.

Excellent conditions of service include in appropriate cases: 100% removal expenses; lodging allowance of up to £200; assistance with professional fees in connection with sale/purchase of housing up to [illegible], whichever is the lesser; casual car user allowance up to 1199 cc. Flexitime in operation; temporary council housing would be considered.

Previous applicants need not re-apply. Closing date March 7, 1984

Application form and job description available from Personnel Department, Civic Centre, Tannery Lane, Ashford, Kent. Tel: Ashford (0233) 37311 Extension 407. (7960)

SPEAR'S GAMES

ANALYST/PROGRAMMER

c.£9,500 p.a.

J. W. Spear and Sons PLC is a leading quoted company in the toy and games industry (marketing the world-famous "Scrabble" game), and selling to several thousand retailers in the U.K.

A vacancy has arisen for an Analyst/Programmer to join the D.P. Development team which is about to embark on a significant phase of expansion based on the ICL ME29, particularly in the areas of production control and office automation.

The ideal candidate will be in the mid 20s-30s, with at least two years' sound experience of COBOL on the ME29. Knowledge of production systems would be an added advantage. The position would therefore be suited to an analyst who is looking to widen his or her experience, or a programmer who wishes to gain experience of systems work.

Benefits include: a competitive salary, 20 days' holiday per annum (rising to 25), contributory pension scheme, private medical insurance, staff discount, subsidised staff restaurant.

To apply, please forward an up-to-date c.v. to Pauline Jones, Personnel Manager, J. W. Spear and Sons PLC, Richard House, Enstone Road, Green Street, Enfield, Middlesex EN3 7TB; or telephone 01-805 4848 for an application form. (7990)

Earn up to £23k net of tax in the Arabian Gulf
Excellent conditions and package
Latest hardware and software techniques

Oil
Exploration

The Arabian American Oil Company (Aramco) is renowned for utilising the latest techniques related to a large IBM environment. The exploration and petroleum centre is at the forefront of this technology having provided in record time a full operational D.P. Installation incorporating IBM 3033's and 3081. The further progression of this operation, combining a fully integrated information centre for its users plus technical planning division, has created a need for more IBM professionals in the following areas:–

Operations Analysts

- Technical support with some knowledge of program product installation e.g. TSO/SPF, SAS, JCL Writing, etc., to support Systems Programmers.

and/or

- Change management with the ability to evaluate CPU utilisation in and MVS, VM environment. Knowledge of IBM INFOSYSTEM would be an advantage as would an operational overview of PL/1 and/or FORTRAN.

Hardware/Software Evaluation

- Technical Planning and the Information Centre division will liaise on hardware and software evaluation respectively. The former requires ability to present the best methods and technology available to management following hardware evaluation. The latter would offer a user service, evaluating, recommending and providing support/training in new software products. Useful knowledge: MVS, VM, SAS, TSO SPF, PL/1, FORTRAN, etc.
- Specialist in IBM communications networking methods, architecture and technology.

Hardware Maintenance

- Typically a field service engineer with experience of VAX 11/780 and graph plotting equipment e.g. CALCOMP, BENSON, APPLICON, etc.

Operators

- To perform operation of IBM 3033's, 3081's at a senior level running under MVS, JES 2 and 3. Experience of Cray 1 useful.
- VTAM network operators with experience of 3705's, 3270, NCP, NPDA and RACAL MILGO communications equipment.

Aramco is located on the Arabian Gulf and enjoys the benefits of a Company operated community with splendid recreational facilities. Successful candidates can expect subsidised air-conditioned accommodation, free medical treatment, generous holidays and return flights to the U.K. The contract of employment is for an indefinite term and is on a single status basis.

Client interviews will be held in London in mid-March so contact **Penny Stock** or **Valerie Blackborow** now for further information and screening interviews on **01-836 8411 at Computer People Limited, VLI House, 68 St Martins Lane, London WC2N 4JS.**

Name ....
Address ....
Tel. No. ....
Evgs/Wknds ....

[illegible]

VLI Computer People London

● 01-836 8411 Computer People London, VLI House, 68-69 St Martin's Lane, London WC2N 4JS ● 01-680 4013 Computer People South, 27 George Street, Croydon CR0 1LB ● 021-643 8501 Computer People Midlands, Alpha Tower, Birmingham B1 1TT ● 061-491 1666 Computer People North, Sovereign House, Stockport Road, Cheadle, Cheshire [illegible] ● [illegible] Computer People International, VLI House, 68-69 St Martin's Lane, London WC2N 4JS ● 01-836 8411 CoOperators, VLI House, 68-69 St Martin's Lane, London WC2N 4JS ● 021-643 8732 Sales People, Alpha Tower, Birmingham B1 1TT ● also offices in New York, Kentucky and Los Angeles

The Market Leaders

TELECOMMUNICATIONS ENGINEER

Salary to £10,000

Bristol Area

Our Client, a major subsidiary of a multi-national Group, is in the process of developing a nationwide interactive network of Hewlett Packard 3000 minis, using CASE DCX equipment.

This has created a requirement for an additional person who, reporting to the Telecommunications Co-Ordinator, will assist in the planning, installation and day to day running of the Company's telecommunications facilities.

Our Client is seeking an ambitious Telecommunications Engineer with at least six months practical involvement in data communications, and the ability to isolate problems, either personally, or by calling in the relevant engineering support.

This challenging position will suit someone with a practical bias and the ability to generate positive relationships with users.

This is an excellent opportunity for a young and ambitious person who enjoys variety, challenge and travel and is keen to take advantage of the excellent career prospects available within this growing and highly profitable Organisation.

A current driving licence is essential as a company car will be available for travel to remote sites.

Starting salary is negotiable to £10,000.

If you possess the necessary level of experience and are looking for an interesting future, contact **Ian Payne** on **021 236 3781** for further information and application form. Alternatively, send him a brief Résumé of your career to date to the Birmingham office address which is shown below.

(8020)

Technical, Sales & Management Appointments

SCR

Specialist Computer Recruitment Ltd

SOUTH
James House, 46 James Street,
London W1M 5HS
01-935 0671/486 0461

MIDLANDS & INTERNATIONAL
35-37 Great Charles Street,
Queensway, Birmingham B3 3JY
021-236 3781

NORTH
International House, 84 Deansgate,
Manchester M3 3EE
061-833 0427

BELGIUM
Avenue Louise 327,
Boite 4, 1050 Bruxelles
010 322-640 7151/71

HOLLAND
Willemsparkweg 92,
1071 H.M. Amsterdam
010 3120-760947

★ IBM SPOT ★

We have over 150 IBM vacancies in London and the Home Counties, of which a brief selection are listed below. We look forward to hearing from you.

MIDDX. £12,000
IBM, COBOL, DOS/VSE. 3 years + experience. RPG II useful, CICS training given.

CITY £11,000 + mortgage
IBM System 38/RPG III. 18 months + finance or banking.

MIDDX. £13,000 + Co. car
IBM System 34/36. RPG II and good customer liaison skills.

BERKS. £9,500
IBM, COBOL, DOS/VSE. 12 months + experience. 3 positions, CICS training.

LONDON £11,000
IBM, MVS, JES 2 COBOL? Great prospects, on-line and database work.

N.W. LONDON To £10,000
IBM System 34/RPG II, 12 months + experience. Retrain on to System 38!

LONDON £11,500
IBM PL/I Analyst/Programmer. MVS, IMS or DL/I essential.

SURREY £11,000
IBM, COBOL, DOS/VSE, CICS and DL/I. 2 years + experience. Subsidised travel.

CITY £9,000 + mortgage
IBM COBOL Programmer, 12 months + DOS/VSE. Full training in CICS and DL/I.

HANTS £11,000
New IBM 4341 site. 2 years + IBM COBOL. Commercial development. Full relocation package.

S. MIDDX. To £13,500
Assistant D.P.M. 3 years + IBM System 38/RPG III experience. Strong personality.

CITY £12,000
RPG III Programmer. 18 months + System 38 experience. New installation.

HERTS. £10,000
2 years + RPG II or RPG III. Retraining provided on to System 38.

ESSEX £11,500
Analyst/Programmer. 3 years + IBM COBOL, DOS/VSE, CICS.

CITY £11,500 + mortgage
IBM COBOL, CICS Programmer for major bank.

HERTS. £9,500
IBM COBOL Programmer. 12 months + DOS/VSE or MVS, CICS preferred.

Contact Carol, Carolyn or Glenda

Brushfield House, 12 Brushfield Street
Bishopsgate, London E1 6AN
Telephone: 01-247 3356 (24 Hours)

ENGLEDOWN

COMPUTER PERSONNEL CONSULTANTS

BOX NUMBERS

Box number replies should be addressed to:

Box Number ....

c/o Computer Weekly
Quadrant House, The Quadrant
Sutton, Surrey SM2 5AS

OPPORTUNITIES IN USA

Circuit Test - MSI/LSI Logic, ATE
Computer Programmers - PDP 11, VAX/VMS
Systems Managers - VAX 11/750, VAX 11/780
Software Development - MC68000 system
Electrical Design - Power Distribution ac, dc
Digital/Analogue Design - EMI investigations
Shock/Vibration Analysis - (FEM) ANSYS

Please forward detailed résumé to:
SAC Technology Group Ltd, Brunswick House, Upper York Street,
Bristol BS2 8QB.

(7900)

AS MANAGER COMPUTER SERVICES COULD YOU COMMAND A SALARY OF £20K?

[illegible] based in the City you will be responsible for the efficient and cost effective provisions of Computer Services to our [illegible] users. The environment revolves around two IBM [illegible] machines operating in both [illegible] and dual processors [illegible] under MVS. A thorough knowledge of relevant Hardware and Software is needed in order to contribute to [illegible] major developments which will require hardware [illegible]

[illegible] will have advanced Man-Management skills and be [illegible] with MVS systems.

[illegible] and the successful candidate [illegible] role of Manager Computer [illegible]

[illegible] Roger Smith, Shuter [illegible] Berkeley Square, London

Shuter Smith International

28 Berkeley Square London W1 **01 491 4653**

Overseas Recruitment and Contract Consultancy

LOOK NO FURTHER!

SYSTEMS 38 ANALYST/ PROGRAMMER WITH RPG3 EXPERIENCE

- Salary negotiable circa £11,000 p.a.
- Prestigious Company
- Small, established team
- Attractive Thames Valley location

If you have a minimum of 12 months' practical experience on Systems 38 with good analytical skills, and the ability to devise and implement programmes for a major manufacturer, we want to hear from you NOW!

So phone the Personnel Department, on Windsor 57191 for an application form, or write to us at

Chesebrough-Pond's Limited, PO Box 242,
Consort House, Victoria Street, Windsor,
Berkshire SL4 1LX.

(8011)

Chesebrough Pond's Ltd.

★ TRAIN IN USA ★ CUSTOMER ENGINEERING

Leading multinational manufacturer, secure and fastgrowing, seeks keen young Engineers to train on special systems and advanced techniques. Sound electronic background essential – disk experience a bonus. Excellent training (US/Europe/UK). Benefits include realistic salaries (£6½-8½K+car, o/t, etc.), friendly management ensures career enhancement, regular reviews, etc. Opportunities NOW in London, Home Counties, Midlands and North-West. OTHER OPPORTUNITIES: Engineers with exp. of DEC/DG/P-Elmer/lookalikes, etc, for London/Home Counties; and Data Comms exp. for E Anglia.

Whatever your requirement – expand your career NOW – RING MIKE HILL ON 01-549 6441 (Office) or 01-394 2359 (outside office hours and weekends, etc).

(7899)

ab executive (kingston) ltd 01-549 6441 24 hrs

HARDWARE & SOFTWARE PROFESSIONALS

At Computing Devices we have a lot to offer ambitious and dedicated professional engineers both in career terms and lifestyle. We are a young successful company with a dynamic history of growth whose current contracts include the design and development of Airborne Digital Image Processing and Stores Management Systems for military aircraft, where we're writing the avionics standards of tomorrow.

We have an open management structure where everyone feels involved and wants to get involved, avoiding many of the frustrations of older companies. Behind us we have the massive resources of the multi-national Control Data organisation.

We are now going through a period of controlled expansion and are seeking talented engineers with experience in any of the following areas:

HARDWARE • SOFTWARE • SYSTEMS

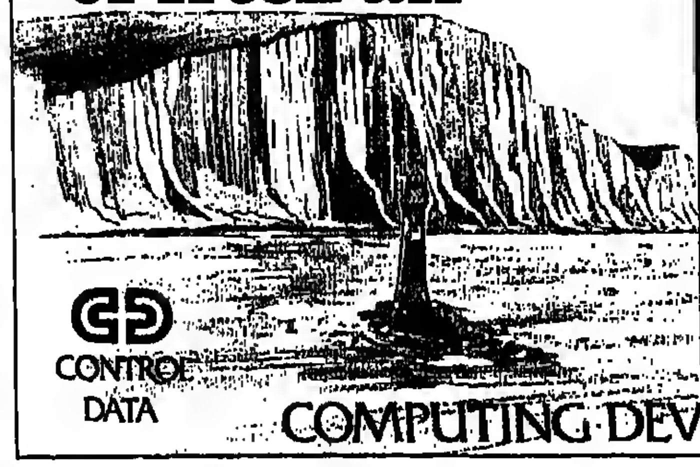
We are involved in high reliability and high speed hardware and software design. Our current projects are utilising INTEL and ZILOG 8 and 16-bit microprocessors. The software is written in CORAL 66 but we envisage moving to ADA shortly.

East Sussex is an attractive area in which to live and offers you and your family an enviable lifestyle. We offer an opportunity where your career can develop.

In addition to a competitive salary you can expect an exceptionally good range of company benefits.

If you are unable to visit us, telephone or write for an application form and further information to Geoff Hansford-Adams or Nigel Perks at Computing Devices Company Limited, Castleham Road, St. Leonards on Sea, East Sussex TN38 7NJ. Tel: (0424) 53482.

Talk to us about giving your career a breath of fresh air



Visit our Exhibitions on 28, 29 February and 1 March between 12 noon and 9 pm at:

WELWYN, Tuesday 28th Feb:
The Clock Restaurant & Motel, Welwyn, Herts (Junction of A1 and A1000).

WEYBRIDGE, Wednesday 29th Feb:
The Ship Thistle Hotel, Monument Green, Weybridge, Surrey.

READING, Thursday 1st March:
The Post House, 500 Basingstoke Road, Reading, Berks.

CONTROL DATA

COMPUTING DEVICES COMPANY LIMITED

Outsell IBM? c. £50k + BMW

Leading plug-compatible manufacturer

Use your knowledge of the IBM large-systems market place and product range to increase dramatically your earning potential.
If you are under 40 with an outstanding sales track record, ambitious and hungry enough to take up the challenge then contact us now! Ref: 6924.

(7941)

Lloyd Chapman Associates

123, New Bond Street, London W1Y 0HR 01-499 7761

[illegible]

Operators/ Senior Operators

Bournemouth £6,500 – £9,000 Plus Benefits

Remuneration inclusive of Shift Allowance

Benefits include relocation package and mortgage subsidy (where applicable), non-contributory pension, free life assurance, subsidised restaurant, sports and social club.

Requirements

Abbey Life has vacancies for Operators and Senior Operators with a minimum of one year's experience of MVS/JES2 (VS1 would be considered). Knowledge of JCL and utilities would be an advantage but not essential for junior positions. Five 'O' levels (including English and Maths) are also required.

The Company operates a five-day, three-shift system, currently under MVS/SP on twin IBM 3083 CPUs with ACF/VTAM, CICS/VS and ROSCOE.

Please write or telephone for an application form to:

Val Hastrop or Alison Davies,
S. & D.P. Technical Recruitment,
Abbey Life Assurance Company Ltd.,
80 Holdenhurst Road,
Bournemouth BH8 8AL.
Tel: (0202) 292373 ext. 4444.

Abbey Life

(8003)

SOFTWARE HOUSE PROFESSIONALS

SALARIES £9K-£22K

Would you enjoy the travel and variety that only a top software house can offer? Do you need a fast moving, stimulating environment working on leading edge Real Time development? In other words would you like to be part of a young, dynamic, no fuss company? Yes? Then you could well find exactly what you are looking for with S-COM.

S-COM is a rapidly growing force within the systems engineering market place. Our expertise and stature in communications (military, telephonic, area networks), process control, graphics and defence applications ensures that both our clients *and staff* are kept in touch with the future.

S-COM has a flexible, non-bureaucratic organisation with highly competitive salaries and benefits and plenty of opportunities to satisfy career aspirations. So, if you have Real-Time expertise in any of the following:

★ DEC or INTEL architecture
★ Assemblers and high level block structured languages
★ Scientific, engineering or defence end users
★ Military, communications or process control applications

Call Lawrence Mills, Geoff Aldridge or Adam Hardiman and discuss the bright new future that could be yours – TODAY

S-COM **Computer Systems Engineers Limited**

Tower House, High Street, Aylesbury, Bucks. Tel 0296 32023
Evenings after 7pm or weekends 0296 33059

(8041)

---

ti

INNOVATIVE BUSINESS SYSTEMS ANALYST

Technical Indexes is a rapidly expanding company within an international group and specialises in the distribution of a wide variety of microfilm and microfiche-based information systems that provide essential technical data to engineers, designers and buyers.

We have a well-established DEC VAX 11/750 System as part of the production process. We are now ready to use the system for the development of new products. To assist us, we wish to recruit an energetic free-thinker who meets the following requirements:

At least two years' experience in business systems analysis
Some computer programming experience
Professional attitude
Probable age 25-35

We are particularly anxious to find someone who is not steeped in the traditions of conventional analysis, specification, design, coding, etc.
We intend to pass straight from analysis to implementation using the ADMINS systems development tool. Knowledge of ADMINS is not essential but would be an advantage.

If you are looking for better ways of fulfilling your role as a Business Systems Analyst, write with details of education, career and present salary to: G. W. G. Hulme, Director of *Technology Development, Technical Indexes Limited*, Willoughby Road, Bracknell, Berkshire RG12 4DW.

PROGRAMMER

An experienced Programmer is required by Software Consultancy in a rural area near Bath. It is expected that the successful candidate will be capable of working with clients in the office or on site with the minimum of supervision. In addition, experience with at least one of the following is essential:

DEC PDP 11
RSTS/E
BASIC PLUS
COMPUTER APPLICATIONS WITHIN THE CONSTRUCTION INDUSTRY

Please apply in writing with a comprehensive c.v. to:

South West Systems
The Old Brewery
Freshford, Nr. Bath

(6875)

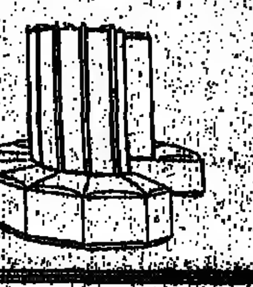
COMPUTER ENGINEERS FOR SUPERCOMPUTERS

● POSITIONS
The company continues to grow rapidly and therefore requires additional Senior and Junior Engineers in the Bracknell, London and West Country areas.

The Senior Engineer position involves high technology maintenance of Cray Systems under the direction of a Senior Engineer. Shift work and overtime may be necessary. The successful applicants will have the opportunity to travel within Europe and the USA.

● EXPERIENCE
Senior applicants should have two years' mainframe engineering experience and will preferably be educated to degree or equivalent standard. Junior applicants should be qualified to HNC/HTC or equivalent, practical experience would help but it is not essential. Full product training in the USA will be given to the successful applicants. These posts offer an excellent opportunity to join a very successful and highly progressive company.

● SUPERCOMPUTERS
Cray Research is a market leader in the design, manufacture and support of large-scale scientific systems. Cray Research Computers are installed in the USA, Japan, France, Germany, UK, Netherlands and Sweden. Cray enjoys a reputation for high-quality performance and support.



● THE PACKAGE
The company package for employees is first class and includes:
★ Excellent salary ★ Profit sharing
★ Company car ★ Share purchase scheme
★ Life assurance ★ Private medical plan

Please phone Phyllis Moretti on 0344 485971 (we will pay for the call) for an application form, or write to the Engineering Manager, Cray Research (UK) Ltd., Cray House, London Road, Bracknell, Berkshire RG12 2SY.

(7969)

CRAY RESEARCH (UK) LTD

---

your appointments register

Programmers

Position	Details	Salary	Location
NCR/IBM/COBOL	Insurance Banking	to £15K	London · H. Counties · N. Eng.
COBOL/PL1/OS/CICS/IMS	Commercial	to £13K	H. Counties · Midlands · Manchester
PROGRAMMERS	DATAPOINT	to £12K	Berks
ICL/COBOL	Two years' commercial experience	to £12K	Notts
DEVELOPMENT PROGRAMMERS	CP/M + DEC	to £14K	Herts
RPG 2/3	Minimum one and a half years' experience	to £14K	Northants/Leicester/London/N.E.
SYSTEMS PROGRAMMERS MVS CICS	Systems experience	to £17K	Middx
BASIC/ASSEMBLER	Mini/Micro Computers	to £15K	London
MINIs	Commercial Applications	to £12K	Norwich/Croydon
IBM VS-FORTRAN/VSAM/ISPF	MVS/TSO	to £11K	Sheffield

Analyst/Progs

Position	Details	Salary	Location
DEC	Industrial Applications	to £15K	Bucks
IBM 34/38/4341	London/Home Counties/Leicester	to £15K	
ICL 1500/ME29/2903	COBOL	to £12½K	Essex/Herts
IBM DOS/VSE	Database and On-line Systems	to £17K	Morroco

Hardware/Support

Position	Details	Salary	Location
TECH. SUPPORT MANAGER	IBM DOS/VSE CICS IDMS	to £16½K + CAR	Kent
SERVICE ENGINEERS	DEC exp.	to £12K	London
TECHNICAL SUPPORT	Pics	to £12K	Bucks./Coventry
OPERATION SYSTEM SUPPORT	Mainframe/Assembler experience	to £15K	Bucks
DEVELOPMENT ENGINEER	Video Terminal Manufacture	to £14K	Middx.
TECHNICAL SUPPORT	IBM Installations	to £12K + Car	Nationwide

Systems Analysts

Position	Details	Salary	Location
SPERRY 1100/FORTRAN	DATABASE Techniques	to £14K	Herts
CAD/CAM	Real time · Modelling	to £16K	Man/Essex/South West
IBM/BURROUGHS	Commercial Accountancy	to £15K	London/Surrey/Manchester
VAX/COBOL	Banking applications	to £15K	London
IBM/ICL	Commercial Applications	to £14K	London/Midlands
IBM SYSTEM 34/38 MAAPICS		to £13K	Sussex

Software Engineers

Position	Details	Salary	Location
CORAL/PASCAL/MASCOT/C	Communications	to £15K	Glos/H. Counties/Midlands/Blackburn
ASSEMBLER	8086/8088	to £12K	South London
MILITARY SYSTEMS/RADAR	Coral · Mascot	to £14K	Hants/Surrey/Essex/S. West
PDP/VAX/INTEL	High Level Assemblers	to £16K	In Derby/Surrey/London/Kent
FORTRAN 77/ASSEMBLER	Coral/Mascot/APT/Communications/Protocols	to £16K	Avon
HP3000/INTEL	CAD/CAM/ATE	to £12K	Home Counties
REALTIME SOFTWARE	Defence/Engineering	to £16K	Bucks.

Snr Appointments

Position	Details	Salary	Location
PROJECT LEADER	Military Systems	to £15K	Berks/Hants
SALES EXECUTIVES	Mainframe	to £30K	Nationwide
CONSULTANTS	CAD/CAM	to £18K	NATIONWIDE
SALES EXECUTIVES SYSTEMS		to £20K	London
SALES EXECUTIVES	Personal computers/IBM Systems	to £20K	Surrey
SALES EXECUTIVES	Telecomms. experience	to £18K	London
SOFTWARE SECTION MANAGER	Pascal/C/Microprocessor	to £18K	Essex/Middlesex

You can be sure of hearing about many opportunities like these, U.K. and abroad, when you make Sloangate your first choice. Take the next step in your career with us!

telephone 01 549 9236

Sloangate The Appointments Register

SLOANGATE LIMITED
[illegible] House
171-177 London Road
Kingston-upon-Thames
Surrey KT2 6RA
Telex [illegible]

IBM ANALYST PROGRAMMERS FRANKFURT

A large and well-known financial organisation is seeking additional staff for their installation in **WEST GERMANY.** Applicants must have the following experience in addition to a desire to obtain a permanent career position abroad.

- **Minimum three years' COBOL or two years' Assembler on IBM4341 DOS/VSE**
- **Knowledge of CICS VTAM ICCF VM**
- **Interest in either applications or systems programming**

Successful candidates will receive a full relocation package for themselves and their families. Interviews will be held in London.

Please contact **Marilyn Davidson** or **David Thompson** on **01-836 6775**

or send a detailed c.v. to the address below

Computer Personnel International
30-32 Southampton Street, London WC2. 01-836 6775

CHALLENGING OPPORTUNITIES ON A VARIETY OF HARDWARE

Our client, an international company based in the City, retains large IBM mainframes, minis and micros.

They offer successful candidates the opportunity to gain varied experience with excellent promotion prospects.

They are currently seeking:

COBOL PROG/ANALYST to £11,000

Ideally applicants will have three years' COBOL preferably gained in an IBM environment.

This is a position on new DEVELOPMENT projects and offers much analysis work for the future opportunity to be involved in a wide variety of hardware and software.

MICRO SUPPORT to £11,000

This is an Analyst/Programmer type role where applicants should have experience of MICRO ASSEMBLER and good user skills. This is a senior position and offers responsibility and opportunity to become included in a wide range of packages.

TWO PROGRAMMERS to £8,000

These are excellent opportunities for two Programmers to enhance their careers. Applicants should have a minimum of one year's experience in either IBM COBOL or MICRO ASSEMBLER.

These positions offer much development work and training on a variety of hardware.

If you are seeking variety and responsibility please call SUE EVANS.

(8053)

direct 242 9796
computer recruitment limited 15 Red Lion Square London WC1R 4QH. Telephone: 01-242 9796

---

logistix Logistix Recruitment Limited
10 Grenville Place, London SW7 4RW

Telephone 01-373 3063

Project Leaders

Herts: Salaries to £15K

The Systems Development Department of a U.S. based company, which specialises in Ethernet-based products, is actively recruiting Project Leaders with a thorough knowledge of software development techniques. Successful applicants will be responsible for teams of between 5 and 10 Programmers and Analyst/Programmers engaged on the design and development of an exciting new range of networking systems products. A degree and fluency in a block structured language are essential, as are good presentation and communication skills. The ability to plan and direct the development of software and hardware for the overall design of new products will form a high percentage of the job content and, therefore, respondents with such experience will be especially welcome. Ref: L/7/A

C₃ Systems

Inner London: Salaries to £18K

The Systems Group of a major supplier of Defence and Emergency services software has a number of urgent requirements from Analyst/Programmer to Consultant level. Candidates should have at least 4 years experience in Communications, probably gained in a MOD establishment or Systems House environment, and also possess a degree, or equivalent, in a numerate subject. Ideally, applicants will have worked on systems such as Ptarmigan, Wavell or BATES although serious consideration will be given to those with a background in System X or other telecommunication software. At the more senior levels it is essential that respondents have analysis and design skills with further experience of MMI, fault analysis, loading and sizing being highly desirable. All positions will attract a bonus payment or a company car. Ref: L/7/B

Electronics Design Engineers

Central London: Salaries to £14K

Profile: Our client, a leading British Systems House, is seeking recruits to meet continued growth in its business in Defence and the Emergency Services. The Company has a large number of projects involving the design and production of advanced digital electronic hardware.
Current projects include:
★ Interface equipment for local area network communication systems.
★ advanced signal processing hardware.
★ data acquisition and analysis systems.

Personnel: The Company is seeking several electronics design engineers with at least one year's experience of digital circuit design. Candidates should have the ability and motivation to take on team leadership responsibility, and experience of, or an aptitude for, proposal preparation. The Company seeks some recruits who have moved on to successful project management after several years experience in digital circuit design. Applicants should have a degree or equivalent qualification. Experience of one of the following would be an advantage.
★ data acquisition and analysis hardware
★ special architecture computers
★ embedded microprocessor systems
★ advanced communications and networked systems

Rewards: In return for your personal commitment and technical skills the company offers an excellent salary together with an outstanding range of ancillary benefits.
Applications: Please submit a well documented resumé or alternatively telephone one of our consultants quoting Ref: LJS/11.

Compiler Development

London & Home Counties: Salaries to £14K

A major Systems and Software House has recently embarked on a large new project requiring the expertise of a number of Compiler Development Specialists. Suitable candidates will have participated in the development of either a Pascal or Ada compiler preferably for 16-bit micros. Familiarity with all phases of compiler development is strongly desirable with particular emphasis placed on Code Generation and Optimisation. Whilst specific responsibilities will vary, depending on the ability and experience offered, all successful candidates will be involved from initial proposal stages through to the creation of a fully self-supporting compiler. Ref: L/7/C

Real-Time Programmers

Central London: Salaries to £11K

A leading Systems House and Consultancy is seeking to recruit additional Real-Time Programmers for its Central London Head-Office. Suitable candidates should be graduates with at least 12 months subsequent programming experience in a real-time scientific environment. It is essential that you offer fluency in at least one of the following: PASCAL; 'C'; FORTRAN; ADA; CORAL-66 or Assembler. Hardware experience is less important, but preference will be given to applicants who have recently worked in a development role on PDP-11/VAX; Intel 8080/8 or Motorola 6800/68000. Ref: L/7/D

Simulation Systems

S. Home Counties: Salaries to £14K

Having recently gained a number of prestigious contracts our client has an immediate requirement for FORTRAN Programmers and Simulation Engineers. The company is sited close to well developed motorway and rail facilities and therefore these positions will appeal to those living in the major Thames Valley towns, Heathrow and Gatwick areas or S.W. London. All candidates should be aged 23-32 years and preferably hold a numerate degree. Your recent programming or systems experience should have been in the areas of (a) VLSI and hybrid circuit design (b) simulation of ballistic/dynamic systems or (c) battlefield/tactical weapons performance. Ref: L/7/E

(8065)

Licensed by D. E. Lic. No. SE 5913

PERMANENT SYSTEMS & PROGRAMMING

CICS SPECIALISTS

BUCKS. £14,000 + CAR

A highly challenging position awaits for the right individual within this small environment of specialist consultants. If you have extensive experience of CICS gained over at least four years call us now. C10209

SENIOR SYSTEMS PROGRAMMERS

ALL AREAS £14,000-£20,000

Extensive MVS systems experience is required by a number of organisations throughout the UK. Competent Systems Programmers with experience of SNA and/or other telecommunications systems desirable. A10047

IBM PERSONNEL

LONDON £10,000-£16,000

Programmers to Programming Managers. COBOL CICS DL/1 expertise is required for a number of organisations. In addition to technical ability senior posts will require proven managerial experience. H8081

PROGRAMMERS & ANALYST/PROGRAMMERS

LONDON £10,000-£12,000

Excellent ASSEMBLER programmers with on-line real-time systems experience is required by a number of installations. IBM background essential additionally a good knowledge of COBOL is desirable. M10036

RPG II/III ANALYST/PROGRAMMERS

MIDDLESEX c.£14,000

Opportunity for Analyst/Programmers on System 38 in a growing young insurance company. Experience of insurance or Retail applications is desirable but not essential. I10093

PROGRAMMER

LONDON £NEGOTIABLE

Strong UNIX combined with the 'C' programming language to carry out development and ongoing support within a highly professional software house environment. A10216

01-439 7871

CONTRACT SYSTEMS AND PROGRAMMERS

IBM SYS 38	RPG III	ANALYST/PROGRAMMERS	UNIVAC 1100	COBOL, BANKING EXPERIENCE AND GERMAN SPEAKING	ANALYST/PROGRAMMERS
IBM	IMS DB/DC COBOL	ANALYST/PROGRAMMERS			
IBM	IMS DB/DC PL/1	PROGRAMMERS	UNIX C	GERMAN SPEAKING PREFERRED	PROGRAMMERS
IBM	CICS/SHADOW PL/1	ANALYST/PROGRAMMERS	VAX	COBOL BANKING EXPERIENCE	ANALYST/DESIGNERS
IBM	MVS	SYSTEMS PROGRAMMER	VAX	VMS COBOL	PROGRAMMERS
IBM	CICS DL/1 COBOL	ANALYST/PROGRAMMERS	PDP	AIMS	PROGRAMMERS
IBM	UNIPAY	ANALYST/PROGRAMMERS	TI 990	BASIC/COBOL	PROGRAMMERS
IBM	BANKING EXPERIENCE	ANALYSTS	ICL	VME/B IDMS/TPMS	ANALYST/PROGRAMMERS
IBM	PL/1 MVS	ANALYST/PROGRAMMERS	ICL	ME29 TPS COBOL	PROGRAMMERS
IBM	DOS/VSE	SYSTEMS PROGRAMMERS	ICL	DRS CIS COBOL	PROGRAMMERS
IBM 8100	DPPX/DPCX	PROGRAMMERS	TANDEM	COBOL	ANALYST/PROGRAMMERS
IBM	INSURANCE BROKING	ANALYSTS			

Our requirements are constantly changing – if your skills are not listed above you may still have the experience we require. Telephone us as we are always pleased to offer advice and to discuss how we can help you.

01-439 1856

datascene

Datascene International Limited

Sceptre House 169-173 Regent Street London W1R 7FB
Telephone. 01-439 7871 Telex 25851

(8084)

London & Brussels CSA Computing Services Association

Contracts

Prog Mark IV TSO/SPF	C. London	4 mths
Anal/Prog/Designer Mark IV VM/CMS	C. London	6-9 mths
Programmers SERIES 1 RPS ASSEM	C. London	6 mths
Designer/Prog IMS DC COBOL	W. London	6 mths+
MVS Systems Prog SNA VSAM	N. London	6 mths
Analyst/Prog DME/VME FORTRAN	S. W. London	3 mths
RPG3 Prog	N. E. London	3 mths
Designers/Progs INTEL 8086/88 ASSEM	S. Herts	1 yr
Systems Prog ICL VME Support	E. London	6 mths+
Systems/Progs CICS/MVS/ASSEM	S. Herts	6 mths+
Programmer ICL SYST 25 ASSEM DMF 2/3	S. Coast	1 yr
Programmers PL/1 MVS	Essex	3 mths+
Programmers MOTOROLA/ASSEM	Herts	6 mths
Senior Designers R/T Systems	W. Country	6 mths+
Programmers PL/1	Brussels	6 mths
Systems Prog MVS	Suffolk	6 mths
Programmers PL/1	Suffolk	6 mths

MIDDLE EAST

Engineers HP1000	Saudi	1 yr renewable
Analyst HP1000	Saudi	1 yr renewable
Service Technician HP1000	Saudi	1 yr renewable
Senior Consultant Background Technical	Saudi	1 yr renewable
Analyst/Progs PL/1	Saudi	1 yr renewable
Scientific Progs IBM (FORTRAN/MARK IV)	Saudi	1 yr renewable
MVS instructor	Saudi	1 yr renewable
Operators Graphic equipment	Saudi	1 yr renewable
WANG Specialist	Saudi	1 yr renewable
ADF Programmers	Saudi	1 yr renewable

Salaries £22 - £30,000 + luxury accommodation, car, holidays etc.

If you are interested in any of the above or would like to let us help you find your next contract speak to either KEITH, JAN or TONY on the number below or any evening on (089 26) 5545 up to 10 pm.

James Duncan & Associates

Recruitment Consultants Wellington Place 64 Mount Ephraim
Tunbridge Wells Kent TN4 8BG Telephone 0892 44757

REAL TIME SOFTWARE

UP TO £18K + BENEFITS

STAINES BASED

We are the Technical Division of an expanding systems consultancy and seek software professionals to lead a further penetration of our existing and new market sections.

Defence Systems
Process/Industrial
Banking
Advanced Communications
Cable TV
High Integrity Systems

Senior staff must be self-reliant, consultancy orientated and be capable of high levels of interaction with the sales team to develop new business.

We also welcome applications from Systems and Software Engineers with a minimum of three years' relevant industrial experience:–

PDP/VAX GEC 4000
FERRANTI INTEL ZYLOG MOTOROLA
Assembler Coral 'C' ADA Pascal
PLM

Mini and Micro experience not covered above may still be relevant.

All candidates must be mobile, committed and willing to work at client sites within commuting distance of Staines. Some opportunities for work also exist on the Hampshire coast. Whilst the candidates should preferably live in the A3/M3/M4/M25 belt, relocation packages will be considered at all levels.

Benefits include competitive salary, free PPP, Life Assurance and Pension Scheme, Training Programs and the opportunity to grow with a young and rapidly expanding company.

Phone Geoff Dongworth on Staines (0784) 63911 or Barrie Kemble on Staines (0784) 56601.

Alternatively phone Geoff Dongworth at home on Hackwood (020679) 6307 or write to him at Cord Designs Limited, Cord House, The Causeway, Staines, Middlesex TW18 3AX.

(8044)

Cord Designs Limited

ZEUS HERMES DIVISION

FIRST AID

PROGRAMMERS TO £12,250

ANALYSTS TO £13,700

THIRTY + NEW PROJECTS AWAIT within major multi-user installation in Central London! Ambitious plans encompass extensive development of on-line database systems on IBM 4300/3030's and replacement with new generation IBM 3080, and continued use of minis and P.Cs. Energetic, innovative analysts are therefore sought to spearhead these new systems! Contenders will be well-acquainted with database/on-line design preferably in an IBM situation, have successfully implemented a previous project and possess good technical awareness. Programmers are also required at varying levels. Whilst the more senior persons will have good IBM COBOL with IMS DB/DC (DL/1 considered), lower level programmers with up to 2 years IBM COBOL and early exposure to CICS, will be TRAINED on database and structured programming techniques.

SOFTWARE TEAM LEADER

London

TO £12,000

REALISE YOUR POTENTIAL to lead a special projects team responsible for converting Cobol software running on DEC PDP and VAX equipment to Data General CS60 and MV4000. It is hoped the successful candidates will make a significant contribution by offering at least two years solid COBOL programming, and detailed knowledge of Data General operating systems! Full training will be given on DEC PDP and VAX equipment. If you have the determination to succeed, and the desire for advancement into: *SYSTEMS/BUSINESS ANALYSIS *PRODUCT DESIGN *CLIENT + SYSTEMS SUPPORT *SALES SUPPORT – CALL US NOW!

ANALYSTS TO £15,000

CONSULTANTS TO £20,000

Advanced and technically demanding projects within the buoyant specialist finance sector exist for both systems analysts and consultants! We seek a number of high class individuals, dynamic and technologically minded – within the London area! A sound background in IBM, ICL, Tandem or NCR would be a distinct asset. If you possess expertise in one or more of the following systems areas and wish to move to a dynamic working environment offering exceptional career opportunity, then telephone for more detailed information *MORTGAGE *ACCOUNTING *BUILDING SOCIETY *WHOLESALE/RETAIL BANKING *MONEY MARKET *INVESTMENT ACCOUNTING *FUNDS TRANSFER *INSURANCE

Telephone Jan Cole or Carol Hammond on 01-580 6272 or at home on 0322 53476 or 01-948 6042

Morley House 320 Regent Street London W1R 5AB 01-580 6272

cole associates

Software and Hardware Engineers with the "End of Project" Blues

Up to £17,000

Recognise yourself? I hope so. Because I have an immediate requirement for talented and ambitious software and hardware professionals for challenging positions within a wide variety of environments.
In all cases, the candidates most likely to succeed are those who respond to the challenge of highly sophisticated systems with clients who are forging ahead in development areas.

I make it my responsibility to ensure that I tailor the needs of the applicant to the requirements of the client. I deal directly with line management – to get the bottom line! – and I make certain that feedback from the client is accurately conveyed to the applicant.

A selection of my immediate requirements are as follows:

SOFTWARE ENGINEERS

to 14K – INTEL/FORTRAN/PASCAL, INDUSTRIAL CONTROL – *HERTS.*
to 14K – VAX/VMS, PASCAL/CORAL, SUPERVISORY CONTROL – *HERTS.*
to 13K – UNIX, 'C', PL/M, PASCAL, COMPILERS/LANGUAGES – *HERTS.*
to 14.5K – LAN, X25, ETHERNET, CAMBRIDGE RING – *HERTS/BEDS.*
9.5K-12.5K – INTEL MDS, PL/M, ASSEMBLER – TELECOMS – *SOUTH LONDON.*
10K-14K – 8088/8086, PCDOS/MSDOS, PASCAL, LAN – *MIDDX.*
to 15K – MOTOROLA/Z80 – UNIX, 'C', CORAL, OFFICE AUTOMATIONS – *WALES.*
to 17K PACKAGE – INTEL, ASSEMBLER, PL/M – COMMUNICATIONS – *GERMANY.*

HARDWARE ENGINEERS

to 11K – TTL, LSI, ULA's, CMOS, MICROPROCESSORS – *WILTS.*
to 13K – COMPLEX PCB's, DIGITAL ELECTRONICS, INDUSTRIAL EXP. – *SOUTH ENGLAND.*
to 14K – MICROPROCESSORS, INDUSTRIAL CONTROL SYSTEMS – *NORTH LONDON.*

SEVERAL REQUIREMENTS FOR – TECHNICAL AUTHORS, QUALITY ASSURANCE ENGINEERS (H/W & S/W), FIELD SERVICE ENGINEERS, ELECTRONIC ENGINEERS. *ALL AREAS. COMPETITIVE SALARIES.*

For more information or to arrange a confidential meeting, please contact Shivon Riordan, on 01-630 1433 (day) or 01-670 9717 (evenings).

Lorien
COMPUTER SERVICES LTD.
We've got it!

Lorien Computer Services Ltd.,
Recruitment Consultants, Greencoat House,
Francis Street, London SW1P 1DH.

Burroughs

Analyst Programmers

The name of **Burroughs** is synonymous with information management throughout commerce and industry.

The success of our highly sophisticated data-processing equipment and systems has firmly established us as a major mainframe manufacturer and supplier of hardware and software.

We have recently reorganised our internal management information services function based in **West London** and have invested heavily in new technology to help us achieve our aims. But we also need to invest in suitably experienced personnel to assist us in our ambitious implementation program of new systems.

- COBOL EXPERIENCE IN A COMMERCIAL ENVIRONMENT
- ON-LINE AND DATA BASE TECHNIQUES
- USER LIAISON SKILL
- AMBITION

There will be considerable involvement with departments within the subsidiary, throughout the **Europe-Africa** division and with **Detroit** headquarters.

Although experience on **Burroughs'** large systems using DMS II would be an advantage, it is not essential. Full training will be provided.

For further information and an immediate interview contact our recruitment consultant, **Simon Koning** in London.

Successful candidates can expect a competitive salary and the benefits associated with a major employer.

TCR

Targa Computer Recruitment

19 Ropemaker Street London EC2Y 9AS Telephone 01-588 9871 Telex: 25851
Monaco House Bristol Street Birmingham B5 7AS Telephone 021-622 2045 Telex: 334237

CSA Computing Services Association

(7976)

REAL-TIME SOFTWARE OPPORTUNITIES IN TELECONTROL SYSTEMS

The Company
We are the leading manufacturer of power automation products and telecontrol equipment and systems within the United Kingdom. Our Systems Software Department is embarking upon new projects at the forefront of today's technology and this has resulted in a need to recruit a number of high calibre personnel with real-time minicomputer system experience.

The Projects
We are currently involved with the design and development of control, distribution and monitoring systems for the Electricity, Gas, Water and Oil industries.

The Candidates

TECHNICAL SUPPORT ANALYST

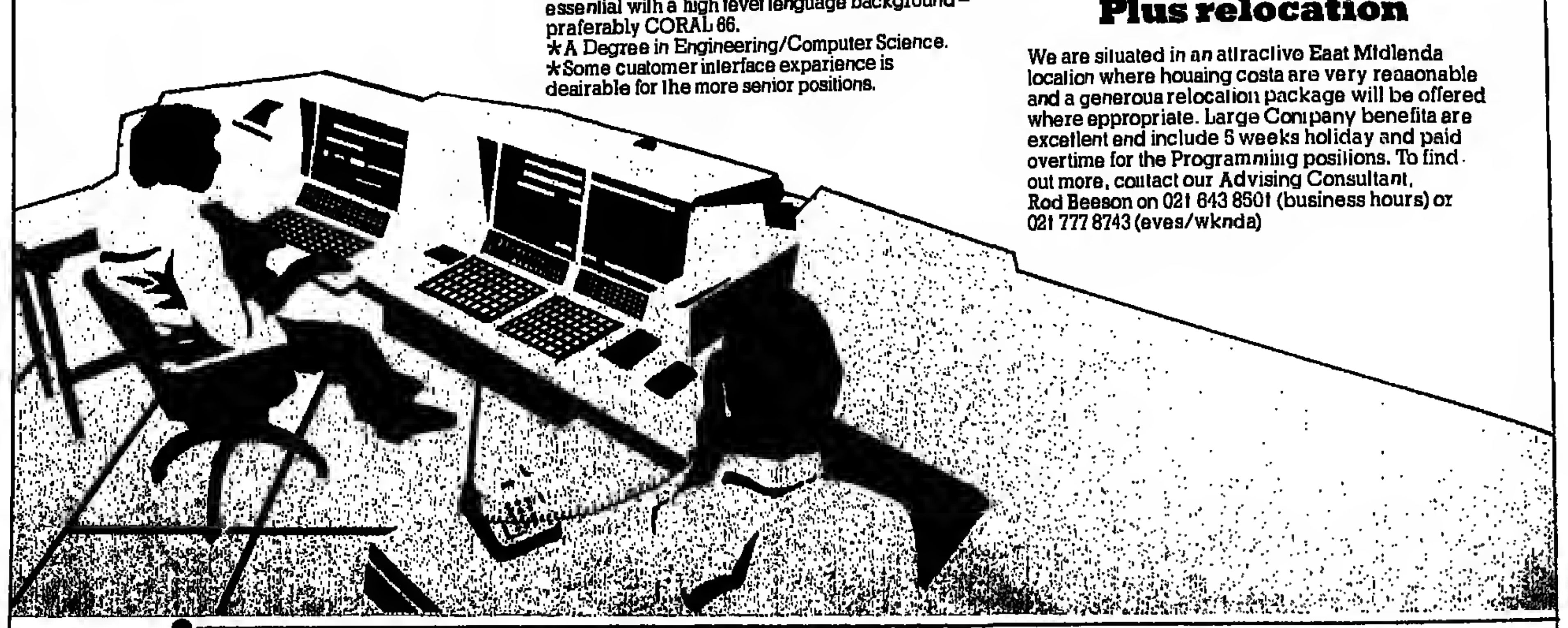
We would like to hear from candidates who have:-
*A Degree in Engineering or Computer Science.
*Approximately 8 years software experience in real-time minicomputer applications including some involvement with telecontrol.
*Good communication skills with the ability to understand system capabilities and user requirements.

SENIOR PROGRAMMERS, & PROGRAMMERS

For these positions we would be interested in candidates with the following skills:-
*A minimum of 2 years software experience is essential with a high level language background – preferably CORAL 66.
*A Degree in Engineering/Computer Science.
*Some customer interface experience is desirable for the more senior positions.

East Midlands
Salary £8,000 — £13,000
Plus relocation

We are situated in an attractive East Midlands location where housing costs are very reasonable and a generous relocation package will be offered where appropriate. Large Company benefits are excellent and include 5 weeks holiday and paid overtime for the Programming positions. To find out more, contact our Advising Consultant, Rod Beeson on 021 643 8501 (business hours) or 021 777 8743 (eves/wknds)



VLI Computer People *Midlands*

●01-836 8411 Computer People London, VLI House, 68-69 St Martin's Lane, London WC2N 4JS ●01-680 4013 Computer People South, 27 George Street, Croydon CR0 1LB ●021-643 8501 Computer People Midlands, Alpha Tower, Birmingham B1 1TT ●061-491 1666 Computer People North, Sovereign House, Stockport Road, Cheadle, Cheshire SK8 2EA ●01-836 8411 Computer People International, VLI House, 68-69 St Martin's Lane, London WC2N 4JS ●01-836 8411 CoOperators, VLI House, 68-69 St Martin's Lane, London WC2N 4JS ●021-643 8732 Sales People, Alpha Tower, Birmingham B1 1TT ●also offices in New York, Kentucky and Los Angeles

The Market Leaders

IBM MACRO ASSEMBLER
COMMS · SERIES 1 · RPS · DATABASE

to £15K + Excellent Prospects

Ambitious – could this be you?

A major international healthcare organisation now seeks **JUNIOR AND SENIOR SYSTEMS PROGRAMMERS** who can apply state of the art technology to provide distributed intelligence aiding in the effective management of our internationally located hospitals.

From its N.W. London base PSI Ltd., provides its parent company American Medical International Ltd., with total systems management expertise.

Successful applicants will join a young, creative team, dedicated to the design, development and implementation of mini and micro networked solutions. Career opportunities will lead to project management responsibility at all stages, from feasibility through to site installation.

Take this opportunity to apply your skills and develop your career in this financially and intellectually rewarding environment, by calling

Hugh Macer or Geoff Cohen on 01-734 9723 office hours or 01-881 2788/ 0702 339601 evenings and weekends.

AMI PSI

CTR **Computer Technology Recruitment Ltd.**
Triumph House, [illegible] London W1R 7WD.

DALROTH

SYSTEMS SUPPORT TO TECHNICAL SALES
Basic c£10,500 + Car + Commission
(Existing staff earnings exceed c£20,000)

SyncSort Technology Limited, with their headquarters in Berkshire, market and support their own products in the UK and Europe. The Company have an established and satisfied customer base for the MVS, VS1, DOS and CMS software products and currently have two vacancies.

The successful applicants will have a background in any of the following:

★ Systems Programming/Systems Engineering
★ Systems Support/Operations Support
★ Assembler Programming

and ideally experience in OS, DOS and VM/CMS or MVS.

The Company is willing to consider a negotiable package to suit the right individual, and will of course offer full training in their products, both in Europe and the USA.

For further information please write to Dalroth and Partners, 4 Half Moon Street, London, W1Y 7RA, quoting ref. 6052, or telephone Ian Murray West day 01-493 2947, 8am-10pm, or Graham Cottingham, daytime Reading (0734) 478335, evenings (0734) 474129.

DALROTH & PARTNERS LTD, 4 HALF MOON STREET, LONDON, W1, Tel: 01-493 2947

Experienced Sales Professionals
Required by a Leading Systems House

Leaders in the field of Turnkey solutions, Systemsolve, part of the Hunting Organisation are looking for experienced Sales Professionals to handle Data General, Hewlett-Packard and CTL Turnkey business sales throughout the United Kingdom.

Systemsolve, having achieved an international reputation for being a leading British owned systems house, has expanded not only its turnover (now in excess of 5 million pounds) but has also expanded into the DG, H-P, CTL marketplaces with a strong range of vertical market software.

To continue with this major expansion program, Systemsolve are currently looking to employ experienced Sales Professionals. Ideally, you should be aged between 24-35 years and have been successfully selling in either the hardware or software marketplaces. You should also be capable of working under pressure, making important decisions and be self-motivated.

For the successful applicants, there is a high basic salary (which is negotiable), an executive company car, plus the usual benefits that you should expect from a large International company.

For further details, please ring Steven Knowles-Baker on 01-370 2012/3, or alternatively, send a brief cv to him at N.K.B. Associates Ltd, 159 Gloucester Road, London SW7 4TH.

All enquiries will be treated in the strictest of confidence.

nkb Associates Limited

(8027)

WANTED — LONDON
MACRO 11 ASSEMBLER/ RSX11/M PROGRAMMERS

Minimum two years' recent experience. Long contract.

HARRISON COMPUTER SERVICES

TELEPHONE (0206) 867667 FOR DETAILS (8032)

TRAINING USA!

Berks c.£16K + car

Our clients are the UK arm of a young US manufacturer of sophisticated computer processors – used in seismographic, image/signal processing, R/T simulation and similar applications. They now seek bright, conscientious SCIENTIFIC/REAL-TIME SOFTWARE specialists to participate in their rapid, spectacular growth and in realising their products' potential.

There will be ample client contact and your easy manner and technical confidence combined with the quality of the products will make this rewarding and easy.

You will VISIT the USA for product training and subsequently enjoy superb fringe benefits together with frequent TRAVEL IN EUROPE and the UK.

Broaden your horizons – take a big stride forward to a really stimulating career. Call Vincent Malling NOW on 01-546 6441 (24 hrs).

...But hurry (8000)

ab executive (kingston) ltd
Specialists In Real-Time

SALES EXECUTIVES

SALES EXECUTIVES – MICROS
High income potential selling IBM PCs and Sirius to end users for established company in WC1. Two sales executives urgently required for London territories. Basic to £12k. Car. £25k OTE

SALES EXECUTIVES – SYSTEMS/SOFTWARE
Major international software house urgently needs two sales executives to sell (i) Payroll and personnel systems and (ii) Financial packages. Preferably living West or North London/Home Counties. Salary £10-12k. Car. Five weeks' holiday. £22-£26k OTE

DEALER/MANAGER – MICROS
International micro manufacturer requires experienced dealer/manager for London/UK. Mainly IBM PCs. Salary to £18k. Car. £30k OTE

SALES EXECUTIVES – MINIS
Established international manufacturer requires several Sales Executives for SE England; to sell minis to commercial territories. Salary to £14k. Car. To £30k OTE

SALES EXECUTIVE – MICROS
Some micro networking experience preferred by London based company. To sell IBM PCs, etc., to professional environment. Good salary. Car. £20k OTE

Plus many other top sales vacancies
Telephone for an appointment

SDS CONSULTANTS
Computer Personnel Consultants

150 Regent Street
London W1R 5FA
Tel: 01-439 6288

After 6 p.m. and Weekends: 0444 458804

(7983)

DATA NETWORK COMMUNICATIONS TECHNICIANS
Up to £10,000 + Shift Allowance

BACS is a wholly owned associated Company of the major Clearing Banks. The main activity of the Company is to provide an electronic funds transfer service to the banks and their customers.

To support our current networks at our Edgware centre and assist with the planned expansion of new telecommunications facilities, the Company is seeking personnel who have had several years experience of data communications and can demonstrate a working knowledge of:-

- Network operations
- Circuit installation and acceptance (P.W. and P.S.T.N.)
- Modem and circuit diagnostic routines
- CCITT recommendations
- B.S.C. protocol
- Data communications test equipment

Applicants must be prepared for shift working, at present days and evenings, for which an additional allowance will be payable. Excellent benefits are offered in addition to a competitive salary, which will include, profit sharing, over 5 weeks annual holiday, non-contributory pension and life assurance scheme, subsidised staff restaurant, Sports and Social Club, relocation assistance if necessary and house purchase scheme after qualifying period.

For further details and an application form please telephone Mrs. R. Sidders on 01-952 2333 or write to her at:

Bankers' Automated Clearing Services Limited, De Havilland Road, Edgware HA8 5QA, Middlesex.

BACS

(8012)

BOX NUMBERS

Box number replies should be addressed to:

Box Number ....

c/o Computer Weekly
Quadrant House, The Quadrant
Sutton, Surrey SM2 5AS

TECHNICAL SUPPORT MANAGER

15K-17K

expert in DEC LSI 11/11, Q BUS Devices and RT-11, based Surrey.

Ring Ann McMillan
Ridgeway Executive Selection
(0372) 378013/374096

34 North Street, Leatherhead, Surrey

(8062)

Fortran Programmer/Analysts

up to £9,500
Looking for a chance to get into commercial systems development?

It's not often that an opportunity arises for you to apply your FORTRAN experience in a commercial environment. But just such an occasion has arisen.

A £multi-million company in the film processing business has PRIME Computers with a large number of terminals to service their laboratories in the UK and on the Continent.

Due to expansion they now seek Programmers with a minimum of two years' experience in a high level language, ideally FORTRAN, who possess the maturity and communication skills to move into Analysis. An awareness of PL1 would be an advantage.

Present systems span a range of commercial and production applications, and your responsibility will include the specification, implementation and subsequent support of new developments. Self-motivation and a willingness to travel are key requirements.

Based at Reading, Berkshire, the package includes annual bonus, subsidised staff restaurant and other benefits.

Please write with full personal, career and salary details to the address below, quoting ref: S3106/CW on the envelope.

Your application will be forwarded directly to our client unopened, unless marked for the attention of our Security Manager with a note of companies to which it should not be sent.

PA
PA Advertising

(8017)

Hyde Park House, 60a Knightsbridge, London SW1X 7LE.
Tel: 01-235 6060 Telex: 27874

The Hunterskil Group of Companies

HUNTERSKIL SOUTH

H. Programming & Systems

The Hunterskil Group provides essential computer skills across Operations and Systems/Programming to installations throughout the UK and Overseas. Contract and Permanent opportunities exist throughout our Group and the following are some of the immediate contract requirements at Knight Computer Services and Hunterskil South.

Knight

HUNTERSKIL
Hunterskil International Limited

CONTRACTS

Systems and Programming

IBM 4300 Chief programmer. Must have PL1, DL1, CICS experience. Unipay would be useful. 1 year assignment	Ref: K1402
IBM PC Programmer wanted for 3 month assignment starting end of March. Must have Focus experience. c. £400 per week.	Ref: K1400
IBM 4300 Applications Programmer. Essential skills CICS, VSAM and VMS. TSO would be useful. 3 month assignment.	Ref: K1381
Wang VS RPGII Analyst/Programmers – ASAP – Middlesex.	Ref: E1396
DEC VAX VMS MACRO 32 Programmer – London	Ref: E1393
DEC PDP II, RSX II, COBOL Senior Programmer – ASAP – Farnborough	Ref: E1392
HP3000 + related software. Programmer & Analyst/Programmer – All areas	Ref: P1410
Redifon R Range, Editor. Programmers – South London	Ref: P1408
IBM 4341, COBOL, CMS, VSAM, Micro knowledge advantageous. First contract in **Central London, 12 months – £10,000 salary**	Ref: P1409
ICL DRS Business Consultant. Local Area Network, 6 months – **Manchester**	Ref: P0897
Micro, Assembler, Pascal, Comms. Programmers. 6 months +.	Ref: P0127
ICL DRS Programmer, Pascal 'C'. ASAP – Manchester	Ref: P0287
UNIX Programmers (Micro)	Ref: P0557
Honeywell DPS8 Business Consultant – 6 months – **Manchester.**	Ref: P0797
Datapoint, RMS – Urgent – Middlesex – c. £450 per week	Ref: S1353
ICL 2900, VME, COBOL, IDMS, TPMS *(Not essential.)* To start **ASAP – London/Wiltshire**	Ref: S1385
DEC PDP, RSTSE, BASIC + Programmers, Analyst/Programmers – Urgent – London	Ref: S1371
Real Time Process Control – Herts. c. £450 per week	Ref: S1110
ICL 2900, VME, VME/B, DDS, IDMS, TPMS. All positions from Programmers to Business Consultants and Designers – **Urgent – all areas**	Ref: S2000
FORTRAN+ — URGENT — Senior Programmer. Start date March – long term. Must have min of 5 years Real Time Data Acquisition and control. To work on Norsk Data. Interesting and involved application – **Oxford. c. £500 per week.**	Ref: S1403
FORTRAN 77 Programmer with possible experience of IBM 3081 and MVS. Nord 100 experience useful (not essential) **Oxford. c. £450 per week.**	Ref: S1404
ICL Designer IDMS – ASAP – 6-12 months – Birmingham	Ref: S1316
ICL Designer IDMS, TPMS – Bucks	Ref: S1372
ICL 2966, IDMS, TPMS Performance and training specialist – Bucks.	Ref: S1405
ICL 2900, VME, IDMS, SCL – 6 months + **Analyst/Programmer.** Good for first time contractors – **City. £375 per week.**	Ref: P1406
ICL PLAN Programmers. Immediate long term vacancies – **Middx. c. £500 per week**	Ref: S1365

Overseas

IBM 4300 Systems Programmer contract. VM/CMS and DOS/VSE to work in **Germany** on operating system conversion.	Ref: K1401
IBM 4300, COBOL, CICS, DL1, Analyst/Programmer x 2 to write Management Information System for 12 months in **Brussels.**	Ref: K1398
IBM System 34, RPGII with strong operational background – **Spain/Italy.**	Ref: E1394
DEC PDP II, RSTS/E, BASIC + Dutch speaking Programmer/Analyst – **Holland.** April start.	Ref: E1390
PRIME, BASIC Senior Programmer/Analyst, Senior Programmer. March start – **Belgium.**	Ref: E1395
Burroughs & MCP, Systems Programmer – Belgium	Ref: P1411
ICL 2900, VME, TPMS, IDMS useful. System Programmers and Programmers – Holland/Switzerland.	Ref: S1138
Datapoint conversion DOS, RMS – long term. Team of 4. German useful/not essential.	Ref: S1000

PERMANENT OPERATIONS

IBM SYS 34/38 OPERATIONS MANAGER **to £14,000 LONDON**
Good technical background and strong man-management ability to control all OP staff. Banking experience an advantage. **Ref: OPS1288**

HP 3000 — MPE OPERATIONS SUPERVISOR **c£9,500 LONDON**
In excess of five years experience is required, preferably in a Financial environment to supervise 3 staff. **Ref: OPS1269**

ICL ME29 — TME SENIOR OPERATORS **to £9,000 MIDDX**
A good ME29 background with the ability to write CL working 3 shifts. **Ref: OPS1270**

VAX 11/780 — VMS SENIOR OPERATORS **to £8,000 LONDON**
Sound DEC experience in a Commercial environment to work extended days in a large international company. **Ref: OPS1287**

IBM 4300's — VM DOS/VSE CICS OPERATORS **£6,200 to £9,000 ALL AREAS**
Various positions in and around London working shifts. **Ref: OPS1259/63/64/65.**

IBM — MVS IMS VTAM NETWORK OPERATOR **to £7,700 SURREY**
Monitoring of communications network working double day shifts. **Ref: OPS1246**

IBM — MVS OPERATOR **to £7,500 HERTS**
1 year's experience to work 3 shifts. **Ref: OPS1247**

CONTRACT OPERATIONS

IBM MVS JCL WRITERS (Dutch speaking if poss) for various contracts in Holland. **Ref: C22**
HONEYWELL DPS7 JCL WRITER (Dutch speaking) for mid-term contract in Holland. **Ref: C21**
ICL [illegible] OPERATOR [illegible] **Ref. C20**
HP3000 OPERATORS for mid term contract. **Ref: C19**
NETWORK OPERATORS always required. **Ref: C18**
HONEYWELL L6 OPERATOR to work part-time evenings starting March. **Ref: C17**

Knight
Knight Computer Services Limited
01-491 4706
Specialist Computer Staff

CONTRACTS

Systems and Programming

IBM DOS/VSE COBOL CICS Programmer
for 3 months plus starting 5th March. **£425 per week** Ref. DR.

MANTIS Programmer
to work under DOS VSE to start immediately 3-6 months. **£425 per week** Ref. DR.

IBM ANALYST/PROGRAMMER
with DOS VSE VM COBOL CICS & DL/1 to start immediately. **£430 per week** Ref. DR.

SYSTEMS PROGRAMMERS
in various locations with MVS and/or DOS experience. Start immediately. **£500 plus per week** Ref. DR.

ICL TECHNICAL SUPPORT
Base and Superstructure IDMS and TPMS. Start immediately. Long term contract. **£500 per week** Ref. LP.

ICL COBOL PROGRAMMER
with IDMS & TPMS. Long terms. Start end of February. **£450 plus per week** Ref. LP.

ICL COBOL ANALYST IDMS TPMS.
Long term. Start now. **£500 per week** Ref. LP.

PRIME ANALYST
6 month contract. Start now. **£500 per week** Ref. LP.

IBM PL/1 Assembler Programmer
with "Focus" experience. Very long term contract. **£500 per week** Ref. LP.

IBM CICS Lecturer
to give occasional seminars. **Fee negotiable** Ref. LP.

IBM ANALYST PROGRAMMER
with TSO (RACF) PL/1 to assist with DOS VS to MVS conversion. **£500 per week** Ref. DR.

DEC VAX COBOL VMS/DBMS PROGRAMMER
6 months. Start Immediately **£450 per week** Ref. LP.

DEC VAX BASIC VMS SENIOR PROGRAMMER
with Design experience for 6 months contract. Start in one week. **Very high negotiable rate** Ref. DR.

OPERATIONS

IMS MASTER TERMINAL OPERATOR
to work on large MVS System. Start immediately. Long term. **£220 per week** Ref. NG.

PRIMOS OPERATOR
for long term contract to start immediately. **£234 per week** Ref. NG.

BURROUGHS 1995 OPERATOR
with MCP & DMS Database experience. 3 month duration. Start now. **£230 per week** Ref. NG.

MVS OPERATOR
with JES2 IMS & VM experience. Start now. **£220 per week** Ref. NG.

DOS VSE OPERATOR
with VM experience to start end April for 9 months. **£200 plus per week** Ref. LP.

IBM MVS JES2 IMS OPERATOR
to start immediately. 3-6 months. **£200 plus per week** Ref. LP.

JCL WRITER/OPERATIONS ANALYST
with MVS experience for forthcoming requirement Ref. NG.

HUNTERSKIL SOUTH
Specialist Computer Staff
(0628) 75551

---

logistix
Logistix Recruitment Limited
10 Grenville Place, London SW7 4RW

Telephone 01-373 3063

UNIX Systems & Applications Senior Sales Executives Applications Engineers Field Service Engineers

London & E. Midlands: Salaries to £25K

PROFILE: **kaan computers ltd** is a leading supplier of UNIX based systems and networks (especially OMNINET) and is again poised for a period of planned growth in 1984.

PRODUCT: Our client's new product line represents an innovative yet evolutionary approach to the resolution of business problems encountered by both single and multi-user sites. It offers:—

- ★ Unrivalled combination of price/performance in the price range of £25,000 — £250,000.
- ★ The very latest MC68000 micro-computer based UNIX systems.
- ★ A comprehensive range of proven office automation software and packages readily available in the U.K.
- ★ High performance, high quality UNIX based graphics work stations.

SENIOR SALES EXECUTIVES: To capitalise on this unique product line Senior Sales Executives based in the East Midlands or The City are urgently sought to complement the company's existing sales force. Successful candidates will, most likely, currently be selling integrated UNIX or mini-computer based systems to one or more of the following sectors:— finance/banking, manufacturing, retailing or Research & Development facilities within academia. Above all, you must demonstrate a high level of achievement and personal commitment over a continuous period of 3 years and be capable of on-target earnings of at least £25,000 per annum.

APPLICATIONS ENGINEERS: Applicants, aged 25-40 years should be qualified to HND or B.Sc level. Your programming background must include fluency in two or more of 'C', PASCAL, FORTRAN or Level II/RM COBOL within a UNIX, PRIMOS MULTICS or OS32 environment. Familiarity with U.K. accounting practice is a considerable advantage especially for those with a current background in financial or systems analysis. Candidates who have used or implemented a relational database (e.g. DBASE II, INFORMIX or RAPPORT) in a business environment are encouraged to apply. You will be expected to visit clients' sites in a pre-or post sales support role. A willingness to travel within U.K. and U.S.A. as and when necessary is of paramount importance.

FIELD SERVICE ENGINEERS: The successful candidates will work alongside, and for, the recently appointed Hardware Engineering Supervisor within the Division's rapidly expanding Engineering Department. You should be aged 25-35 years and preferably have completed an engineering apprenticeship. Your current or recent background should include two or more of:— hardware/software interfacing of UNIX or mini-computer based systems, quality assurance and control, co-ordination and supervision of product deliveries, pre-installation and on-site services, or in-house fault finding activities. This position will greatly appeal to the career minded since our clients anticipate an early promotion.

REWARDS: For all positions total earnings will be limited only by ability. The company offers a competitive salary, an outstanding range of ancillary benefits and excellent career prospects. You will be offered either a company car or generous allowance in lieu.

APPLICATIONS: You should supply a well documented resumé or alternatively telephone one of our Consultants quoting Ref: LJS/12.

(7879)

Licenced by D.O.E — Lic No SE 5913

12-18 months IBM Programming?

Expand your experience . . . with a world leader

WEST LONDON

If you have at least 12-18 months IBM programming experience . . . we can offer you an attractive opportunity to gain excellent experience in our small, professional DP team working on the maintenance and development of a variety of commercial applications on an IBM 34/36 using RPG II.

Good communications skills plus the drive to succeed in a busy environment is essential.

Landis & Gyr is a world leader in the manufacture of electricity meters and Europe's largest producer of heating, ventilating and air-conditioning controls.

We will offer an attractive salary to reflect your ability and experience. Excellent large company benefits apply.

For an application form please contact Louise Stevenson, Personnel Assistant, Landis & Gyr Ltd., Victoria Road, North Acton, London W3 6XS. Tel: 01-992 5311, ext. 3226.

(7985)

the measure of success

LANDIS & GYR

ICL COMPUTER PROFESSIONALS

Come on board Britain's most progressive ferry company. Townsend Thoresen, part of the European Ferries Group has consistently been voted top ferry company by the travel trade. This success has led to a major expansion of the group's computer activities based at Dover.

A real time reservations system is in operation with terminals throughout the UK and on the continent. This system also hosts an interactive agency viewdata system utilising PRESTEL GATEWAY.

Operations are based on twin ICL 2966s. The service is provided 24 hours per day, 363 days per year. The viewdata system is front ended by a MODCOMP classic configuration. Additionally, support is provided to several micro installations throughout the UK.

SYSTEM SUPPORT PROGRAMMER

A system programmer is required to join our busy technical services section.

Four years' sound experience is required at least one of which must have been spent in a VME support role. Experience of one or more of the following would be an advantage: COBAL, PASCAL or DME.

The right candidate must be able to demonstrate the ability to work on their own initiative.

ANALYSTS

Experience of VME/DME transition will be of particular interest, as will practical experience of on-line systems, database, mini and micro systems. Candidates with limited analysis experience having a solid programming background, will also be considered.

These positions offer excellent
opportunities, highly competitive
salaries and benefits
package which includes
concessionary
travel and
a pension scheme.

Please apply with full c.v. to
Derek Weaver
Senior Personnel Officer
Townsend Thoresen
Enterprise House
1 Channel View Road
Dover
Kent
CT17 9TJ

(8039)

TOWNSEND THORESEN

[illegible]

SYSTEM INDUSTRIES

is the world's largest independent supplier of minicomputer mass storage systems and is a California-based company. Due to expansion we are seeking to fill the following positions at our Surrey base:

HARDWARE SUPPORT ENGINEERS SOFTWARE SUPPORT ENGINEERS HARDWARE TRAINING INSTRUCTORS SOFTWARE TRAINING INSTRUCTORS

Salary is negotiable for these positions and a company car will be provided along with the usual company benefits.

Please phone Rosemary on extension 237 for further details.

We also require:

FIELD SERVICE ENGINEERS LONDON/CAMBRIDGE

Please contact Chrissie on extension 206
SYSTEM HOUSE, GUILDFORD ROAD
WOKING GU22 7QQ
WOKING (04862) 5077

(8002)

Our client has the distinction of being the first company in the world to commercially offer the 68000 processor. They are one of the market leaders with a comprehensive and highly successful range of 16/32 bit multi-user systems, complemented by an extensive range of vertical market software, all produced by the company.

As a result of further growth our client is seeking to employ the following technical personnel:-

PRE/POST SALES CONSULTANT:

£12-£14K + Car + Benefits

This position offers the opportunity to become part of an extremely professional team. The successful applicant will provide both pre and post sales support of software running on the Motorola 68000 16/32 bit multi-user systems.

Suitable applicants could come from a wide variety of backgrounds but experience of pre sales support in a mini/super micro environment would be ideal. The successful applicant will be technically competent and able to communicate effectively at all levels.

SYSTEMS ANALYST:

Circa £13K + Benefits

The company are for the first time, developing applications software outside the United States. This position offers the opportunity to become an integral part of this development team, which is expected to expand rapidly. The company are therefore seeking individuals who have the capabilities of growing with the position.

Ideal candidates will already have 3 years proven development experience with a mini/micro company. A good formal education and a knowledge of PASCAL would be advantageous.

Both positions will be based at the company's European Headquarters

SITUATED ON SURREY/BERKS BORDER

and offer exciting opportunities to join one of the most successful and rapidly expanding high technology companies in the UK.

The company offers generous fringe benefits, but the real benefits derive from working for a growing company which is already one of the outstanding successes of the 1980's.

For further details contact Barbara Alen at our Reading Office on (0734) 595346 or write sending full c.v.

(7571)

McCOURT COUSINS LTD.
Computer Recruitment Consultancy

27-29 Greyfriars Road,
Reading, Berkshire
Telephone (0734) 595346 (24 hours)

Chesham House, 150 Regent Street,
London W1R 5FA
Telephone 01-439 6268

SYSTEMS PROGRAMMER

Salary up to £11,000 p.a.

Do you want-

- ★ The challenge of working on the latest IBM hardware and software.
- ★ The chance to develop your career in a progressive and growing organisation
- ★ The opportunity to live in an area of outstanding national beauty, including the world famous Ironbridge Gorge.
- ★ The benefits of a nine-day working fortnight, free life assurance which are just a part of an outstanding employment package.

If so, we will pay you as a systems programmer up to £11,000 p.a. to provide wide ranging technical advice on the operation and use of our IBM System 4331, which is shortly to be upgraded to an IBM 4361. Software in use at present includes VM/CMS, VSE, CICS, RAMIS, GENER/OL supporting at present forty on-line terminals

The computer division is unique in servicing both District of Wrekin Council and Telford Development Corporation jointly. There is a firm commitment in both organisations to developing computer systems using the latest techniques available

Application forms and job description are available from the personnel unit (Telford 505051 ext. 451) and should be returned to the Personnel Manager, District of the Wrekin Council, Malinslee House, Telford, Shropshire TF3 4LD not later than 1st March, 1984.

Wrekin is an equal opportunity employer. Job sharing arrangements may be applicable in certain cases

Wrekin

Waltham Forest College

Principal Lecturer in Computing

The post of Principal Lecturer responsible for the leadership and development of the Computer Unit is tenable from 30 April 1984.

Salary – £13,164-£18,389 per annum inclusive.

Application forms and further details available from the College Personnel Services Officer, Waltham Forest College, Forest Road, Walthamstow, London E17 4J8.

Tel. No. 01-527 2311 Ext. 259

Closing date 21 days from appearance of advertisement.

AN EQUAL OPPORTUNITY EMPLOYER

Waltham Forest

Senior Programmer – Development

Saudi Arabia c£27,000 pa

Our client, one of the largest banks in the Middle East, is currently installing data communication facilities with network management for its domestic branch network, and is in the process of defining the needs in all other areas of voice and data requirements. New software for banking applications are currently being developed, e.g. ATM's, message switching, electronic mail, enhanced accounting facilities to be installed on their NCR 8575/65 and 9300 systems.

The SNR Programmer (Development) will be responsible for the production of all development software to agreed installation standards and deadlines. He will enhance and maintain programming standards, maintain efficient programme testing service, and plan and control utilization of programming resources. Reporting to the EDP Manager, he will have responsibility for technical supervision of 20 programming staff, and for designing and maintaining staff training programmes.

The successful candidate should have a minimum of 5 years' proven DP experience (COBOL) with relevant project leading/programming management exposure. Experience of banking systems utilizing NCR equipment would be a distinct advantage.

The tax-free salary is complemented by excellent terms and conditions which include a two year renewable contract, transportation allowance, car loan, housing allowance, paid leave home and free medical treatment.

Please write – in confidence – with full career details to F. M. Bishti ref. FY.1102/12,

HAY-MSL Selection and Advertising Limited,
52 Grosvenor Gardens, London SW1W 0AW.

HAY-MSL
middle east

Our client...

"I'm seeking to recruit highly talented HARDWARE & SOFTWARE ENGINEERS and SPECIALISTS with ambition and varying levels of experience in real time computer systems technology

...and I will pay them what they are worth"

The invitation is there...

He has a number of openings, at various levels, in...

- **Project Management**
- **Electronic Hardware Design**
- **System Design**
- **Project Software Design – Software Engineering**

If you have a qualification in a Scientific or Engineering subject, supported by several years' suitable experience, and are now looking to accelerate your career development with one of the world leaders in the manufacture of modern computer systems...

...then please write with full details. These will be forwarded direct to our client. List separately any companies to whom your application should not be sent. Richard Town ref. FY.1543.

These appointments are open to men and women.

HAY-MSL Selection and Advertising Limited,
474 Royal Exchange, Manchester M2 7EJ.

Offices in Europe, the Americas, Africa, Australasia and Asia Pacific.

HAY-MSL
CONFIDENTIAL ADVERTISING

First choice, nationwide.

Ring Debbie at
Hemel Hempstead
0442 40761
Jane at Croydon
01-681 8311

Immediate opportunities and a straight deal

Computer Search and Selection Limited, Hamilton House, Marlowes, Hemel Hempstead, Herts HP1 1BB. Telephone: Hemel Hempstead (0442) 40761.
Computer Search and Selection Limited, 6th Floor, Carolyn House, Dingwall Road, Croydon, Surrey CR0 9XF. Telephone: 01-681 8311.
Computer Skills International Inc. 1 Buckminster Place, Framingham, Massachusetts 01701, USA. Telephone: 0101 617 872 1225.

IBM

IBM DOS COBOL CICS DL/1 ANAL/PROGS.
IBM DOS COBOL MANTIS VSAM ANAL/PROGS.
IBM MVS SYSTEMS GENERATION
IBM SY/38 RPG3 +/– MAAPICS ANAL/PROGS.
IBM VM/CMS FORTRAN or SYSTEM 77 PROGS.
IBM MVS CICS ACF2 PROGS.
IBM MVS IMS DB BUSINESS SYS ANALS.
IBM DOS/VSE COBOL DPAC ANAL/ANAL/PROGS.
IBM PL/1 CICS DL/1 PROGS.
IBM COBOL IMS DB/DC ANAL/PROGS.
IBM 4300 MVS PL/1 ANAL/PROGS.
IBM MVS ASSEMBLER SYSTEMS PROGRAMMERS
IBM PERSONAL COMPUTER FOCUS ALL LEVELS
IBM BANKING SIX MONTHS' BANKING EXP. (URGENT) SYSTEMS ANALYSTS
IBM ASSEMBLER OS OR MVS MACRO LEVEL CICS (OPPORTUNITY TO LEARN IDMS) PROGS.

ICL

ICL VME COBOL IDMS TPMS PROGS or ANAL/PROGS.
ICL 2900 VME TOTAL TPS ANAL/PROGS.
ICL TOTAL SYSTEMS DESIGNERS
ICL VME IDMS TPMS SUPERSTRUCTURE TECHNICAL SUPPORT
ICL VME IDMS TPMS COBOL PROGS & ANAL/PROGS.
ICL VME IDMS COBOL PROGS & ANAL/PROGS.
ICL VME COBOL PROGS & ANAL/PROGS.
ICL DRS20 CICS COBOL PROGS & ANAL/PROGS.

OVERSEAS

USA
DATABASE TROUBLE SHOOTER – URGENT MIN. FIVE YEARS' EXPERIENCE
VAX SYSTEMS PROGRAMMER
PRIME COBOL FORTRAN SENIOR PROGRAMMER AND PROJECT LEADERS

BELGIUM/HOLLAND
IBM SYS 36/ or IBM SYS 34 RPG2 (DUTCH SPEAKING) ANAL/PROGS.
Please contact Joan Lovejoy on 0442 40761

NORTHERN ENGLAND

In addition to the current requirements below, our increasing attention to the North of England means that we need contractors with a diversity of skills to join us for work in the area. Register with us now if you want a Northern contract.
Ask for Eddie Lestrade: 0442 40761
IBM IDMS PROGRAMMERS
ICL VME IDMS X TPMS COBOL PROGRAMMERS
DATA GENERAL RDOS BUSINESS BASIC ANAL/PROGS. BUSINESS
PRIME SYSTEMS DESIGNERS
Z80/Z8000 C PASCAL ASSEMBLER ANAL/PROGS.
PDP 11 RSX11/M CORAL/PASCAL SOFTWARE ENGINEERS
URGENT: GEC OS4000 CORAL BABBAGE SOFTWARE ENGINEERS
HONEYWELL L66 COBOL DM4 PROGRAMMERS
CMC PICK RPL SM1 PROGRAMMERS

SCOTLAND
REAL TIME MILITARY SYSTEMS EXPERIENCE SOFTWARE ENGINEERS

OTHERS

HP3000 COBOL IMAGE VIEW QUERY PROGRAMMERS
PDP11 RSX11/M MACRO-11 (FINANCIAL/BANKING EXP. PROGRAMMERS)
8 BIT REAL TIME SOFTWARE DESIGNERS
ZILOG Z80 ASSEMBLER +/ RSX11/M APPS PROGS.
ANY MICRO AND HIGH LEVEL LANGUAGE WITH ATE EXPERIENCE SOFTWARE ENGINEERS
CMC SOVEREIGN BASIC ANAL/PROGS.
M68000 MVS PASCAL or ASSEMBLER ANAL/PROGS.
M6805 ASSEMBLER ANAL/PROGS.
HP3000 COBOL ANAL/PROGS.
INTEL MASCOT PERIPHERALS SOFTWARE DESIGNERS
NCR TOWER UNIX COBOL (ANY or GOOD UNIX COBOL)
VAX VMS COBOL ALL LEVELS
WANG VS COBOL (URGENT)
DATA GENERAL AOS. VS BUSINESS BASIC ANAL/PROGS.
VAX COBOL PROGS & ANAL/PROGS.
WANG COBOL PROGS & ANAL/PROGS.
SAFES PROGS & ANAL/PROGS.
HONEYWELL L66 IOS/TDS COBOL PROGRAMMERS
UNIVAC 1100 DMS COBOL ANAL/PROGS or PROGS.

CS+S Computer Search & Selection

(8026)

JUST LOOK WHAT YOU GET WHEN YOU CONTRACT IN SAUDI ARABIA...

ACCOMMODATION

Modern, fully furnished, air conditioned villas are provided free of charge on a developed complex which offers a multitude of sporting and cultural activities. Company cars are also available on a shared basis.

WORK

Our client boasts one of the most advanced computer installations in the world which consists of seven IBM mainframes (3033's and 3081's) and a diverse range of mini and micro computers.

MEDICAL

Each contractor is covered for medical costs for non-urgent and urgent treatment. In addition a generous sick leave is in operation.

HOLIDAYS

30 days minimum holidays are fully paid per annum plus re-patriation flights to and from the U.K.

...ALL THIS AND £30,000 PER ANNUM TAX FREE*

In conjunction with our Saudi Arabia agents we can offer these superb contracts to professional candidates who possess skills in one or more of the following areas:-

PROGRAMMER/ANALYST – PL/1, TSO/SPF, IMS, ADF.
BUSINESS ANALYST – IN DEPTH KNOWLEDGE OF WANG, IBM PC, TO SUPPORT THE SYSTEMS DESIGN AND IMPLEMENTATION OF MICRO COMPUTERS.
SCIENTIFIC PROGRAMMERS – FORTRAN/OR PL/1, LARGE IBM ENVIRONMENT.
SYSTEMS ANALYST – FOR LONG RANGE STRATEGIC PLANNING WITH RISK BENEFIT ANALYSIS.
VAX/PDP SYSTEMS ANALYST – IN DEPTH KNOWLEDGE OF HARDWARE INSTALLATION AND SOFTWARE DEVELOPMENT, APPLICATIONS AND NETWORKING.

The successful candidates will be offered one year renewable contract initially on a single status and the starting salary will be dependent on experience. **PLEASE CONTACT PETER MADAMS NOW ON 01-723 4053.**

Comcap Resources Ltd.,
26 Chilworth Street, London W2.

*Maybe subject to local Tax.

[illegible]

imhof

Making space for your technology

'A challenging opportunity to consolidate your career in a fast moving and expanding group.'

Imhof, one of Europe's market leaders in the field of electronics packaging requires key personnel for the U.K. management services department to assist in installing and developing new systems incorporating U.K. and European requirements.

PDP11/70's, 23, 34

Software Engineer to £14.5K

Responsible for fine tuning existing systems, linking of company's PDP70's and evaluating new hardware. Detailed experience and knowledge of RSTS/E, communications and RSX essential. Reports to Systems Manager.

Business Analyst to £12.5K

Reporting to Management Services Manager, the company is looking for an intelligent individual to undertake studies and projects concerning the whole range of business decision making. This is an opportunity to apply an enquiring and analytical mind to a complex area. The ability to communicate clearly both orally and on paper at all levels is essential. 4 years O and M experience is required in an engineering environment.

Analyst Programmer to £11.5K

Candidates should have a minimum of 2 years' experience of Basic + under RSTS/E preferably with a knowledge of production systems. Duties include system generation for production control system in France and order processing system in U.K., maintenance, package installation and training junior staff. Reports to Systems Manager.

Middlesex

Excellent prospects for even greater management responsibility exist both within the company and its diversified publicly quoted group.

To apply please telephone George Shaw on 01-549 9236, (24 hour answering service).

(8047)

Sloangate Recruitment Advertising Limited
Dominic House, 171-177 London Road, Kingston-upon-Thames,
Surrey KT2 6RA. Telephone 01-549 9236 Telex 918417 STARADO

Sloangate Recruitment Advertising

SYSTEMS & PROGRAMMING

IBM ANALYST/PROGRAMMERS & SYSTEMS PROGRAMMERS

SAUDI ARABIA **£High + benefits**

Excellent opportunity for IBM DOS & MVS professionals to work in the Middle East on the latest hardware and software. Enjoy high tax-free salaries and full range of benefits including FREE ACCOMMODATION & MONTHLY BONUS. If you have two years+ solid experience, preferably gained in an online database environment, please telephone for further details. Ref: T2485

MVS SYSTEMS PROGRAMMER

CITY **to £17,000 + MORTGAGE**

International bank in the City seeks an MVS Systems Programmer with experience on installing and maintaining MVS. Benefits include MORTGAGE subs., low-interest loans and n/c pension. Ref: M2407

IBM RPGII/III

C. & GREATER LONDON **to £17,000**

A small but established software house is currently seeking to recruit IBM RPG professionals at various levels. As a Programmer, you can expect to broaden your knowledge working with the latest hardware/software whilst Analyst/Programmers should progress towards Project Leadership roles, taking advantage of extensive training facilities. There is also scope for those already holding junior management positions. Excellent benefits including paid overtime and expenses. Ref: D2473

ICL PROGS, ANALYST/PROGS & SYSTEMS ANALYSTS

LONDON & HOME COUNTIES **to £13,000**

We have a number of clients in many sectors of commerce including financial and bureau organisations who are currently seeking to recruit ICL professionals. All positions offer excellent long-term career prospects. Particularly in demand are a knowledge of database and online techniques. Ref: D/Gen

SYSTEM 38/RPGIII

WEST OF LONDON **£12,000 + Relocation**

Recognised as market leaders in their field, this commercial concern is dedicated to implementing advanced and effective computer systems in order to improve business efficiency. Their need is for a highly-motivated individual with a good DP background including a knowledge of System 38/RPGIII, to help achieve long term development plans. A competitive salary is offered together with a good company benefits inc. relocation assistance where appropriate. Ref: D2416

SENIOR ANALYST/PROGRAMMER

LONDON & HOME COUNTIES **£Neg + quality CAR**

Unique opportunity to progress for an ambitious senior IBM professional with strong CICS and DL/1 experience. The successful candidate will take charge of a rapidly growing section within this leading computer services company, assuming responsibility for its growth and efficiency. Phone now for further details of this challenging position. Ref: T2486

IBM ANALYST/PROGRAMMER

CITY **£12,000 + MORTGAGE**

This City-based financial concern requires an IBM COBOL Analyst/Programmer with two years+ experience. The successful candidate will be involved solely in the development of online and batch systems. The company offers full training in CICS and DL/1 together with normal banking benefits including MORTGAGE subsidy. Ref: M2488

PROGRAMMERS & ANALYST/PROGRAMMERS

LONDON **£9,000/£13,000 + CAR**

Successful software house seeks to recruit several COBOL professionals to work on a variety of projects at their prestigious client sites. Applicants should have two years+ experience in either of the following: IBM COBOL, CICS, DL/1 or ICL VME/B, IDMS, COBOL. Ref: T2313

RPGII TO RPGIII

CITY **c.£12,000**

Prestigious financial organisation is seeking to recruit two additional RPG professionals to assist in the development of several major projects. Both candidates will have a minimum of 12 months' RPGII; good systems design experience is also required for one of the positions. This is a rare opportunity to acquire excellent System 38 expertise and broad financial applications knowledge. Ref: D2395

SYSTEM 34/RPGII

ESSEX **£8,000-£11,000**

Major Essex-based engineering concern is seeking to recruit Programmers for its expanding development team. Candidates should possess a minimum of 12 months' RPGII programming experience and the ability to progress into an Analyst/Programmer role. Scope for involvement in interesting projects and genuine prospects for career development. Ref: D2482

ICL 1900 to 2900 COBOL

MIDDLESEX **£8,000 neg.**

Further development plans within this leading commercial concern have created an immediate need for ICL COBOL Programmers to become involved with a broad range of interesting commercial applications. In addition to a challenging workload, full training will be given in ICL 2900 systems with VME, IDMS and TPMS. Ref: D2490

SYSTEM 36/RPGII

KENT **c. £10,000**

Progressive commercial concern about to implement online facilities to all departments is currently seeking a Programmer and Analyst/Programmer to become key members of a team developing new systems for the System 36. Competitive salary and benefits including company pension scheme. Ref: D2484

IBM COBOL PROGRAMMER

CITY **£9,000 + MORTGAGE**

If you have 12 months+ experience as an IBM COBOL Programmer, this insurance company may have the opening you are seeking. The company retains an IBM 4331 under DOS VSE with CICS & DL/1. Training is offered in online and database techniques. Full range of benefits including MORTGAGE subs., travel subs., n/c pension and savings scheme. Ref: M2282

SYSTEM 36/RPGII

C. LONDON **c.£12,000**

Opportunity for an ambitious Analyst/Programmer or Programmer with RPGII experience to join a small, highly professional team. The successful candidate will be responsible for designing and programming business systems and full implementation of these systems to user satisfaction. The company offers scope for genuine career advancement and excellent fringe benefits. Ref: D2207

Computer Two Thousand Ltd
Data Processing Consultants
217-218 Tottenham Court Road
London W1P 9AF

(8046)

Tel: 01-636 7584 (24-hrs)

Cheshire Recruitment

We will put a lot of effort into finding the best targets for your skills. Let us help and advise you to further your career. Phone us NOW or write with a detailed c.v.

With five consultants in touch with computer users both in the UK and overseas we always have a wide range of career opportunities from Junior Programmers through to Management and Sales Positions. Many are never advertised.

We provide a professional and personal service to computer personnel seeking employment on either a permanent or contract basis.

PERMANENT

No matter where you are now, consider where you want to go. The next step is vital. We will help you take the right direction. Get your c.v. to us immediately or phone us today. We will be happy to talk to you.

PROGRAMMERS 2-5 years' experience of any hardware. Especially IBM and/or database knowledge. All areas.

SYSTEMS ANALYSTS Particularly with financial manufacturing systems experience. Most areas.

ANALYST/PROGRAMMERS Do you want to move into sales support with a manufacturer? NORTH-WEST, NORTH-EAST and MIDLANDS. Good salaries and company car.

SALES OPPORTUNITIES For successful hardware, bureau or software salespeople. All areas. Some trainee positions.

ANALYST/PROGRAMMERS Vacancies in a number of software and systems houses. IBM, ICL, HP or DEC experience. NORTH-WEST and MIDLANDS.

REAL-TIME PEOPLE At all levels, programmers, designers, etc. A wide range of opportunities EVERYWHERE.

CONTRACT

COMMERCIAL PROGRAMMERS AND ANALYSTS

We have a wide range of requirements for programmers with experience of IBM, ICL, UNIVAC, DEC, PRIME or HP throughout the UK with database and TP experience being an added advantage. We are also looking for a number of systems analysts with sound manufacturing systems experience on any hardware for long term contracts.

REAL-TIME PROGRAMMERS AND DESIGNERS

If you have experience of "Time-Critical" applications and a knowledge of CORAL, BABBAGE, FORTRAN, RTL, MASCOT, assembler, etc, we probably have a contract to suit you. Contracts range from 3 months to 18 months initially. We need people to work throughout the UK and overseas.

Thinking of Contracting? First-Timers Guide available on request.

CHESHIRE RECRUITMENT

72A Water Lane, Wilmslow, Cheshire SK9 5BB
Telephone Wilmslow (0625) 533663

Evenings and weekends telephone Bernard Gibbons (0625-585710) or Philip Gilchrist (0625-522731).

PERSONAL SERVICE GUARANTEED. (Ref: CW2/1)

(8004)

London & South East

IBM COBOL and/or PL-1

£7,500 to £10,000

12 months or more experience gained in any environment to be trained in CICS and DL-1 on IBM 4300 under DOS/VSE (shortly to be upgraded to MVS). Career prospects and progression into analysis in fully online installation.

Junior IBM Systems Programmer

£9,000 to £11,500

Applications ASSEMBLER or COBOL programmer with some experience of CICS will be offered chance to move into Systems work on IBM 4300. 6-12 months exposure to CICS required with around 18 months total experience.

System 34 or 38 RPG

£9,000 to £15,000

Want to gain valuable System 38 RPG-3 experience? Become involved in "State of the art" System 38/IBM P.C. comms? The automated office applications areas? 1 year experience minimum!

DEC BASIC +, +2

£8,000 to £14,000

Move into Systems or Analysis work on PDP 11 and VAX equipment and learn Datatrieve. At least 18 months experience on any DEC hardware. All areas.

CICS Programmers

£10,000 to £17,000

All areas! Programmers with online COBOL, PL-1 or ASSEMBLER (upwards of 18 months experience) are required for positions in Manufacturing, Consultancy, Banking, Insurance and Commercial sectors, on both MVS and DOS hardware.

RPG-2 Senior Programmer

c. £11,000

A good knowledge of RPG-2 gained on any machine is required for varied mainframe environment, running fully online commercial systems. 2 years + experience required for this step towards a more responsible role.

The above positions represent only a fraction of the job opportunities on our files. If you do not see a suitable opening, please call and discuss your requirements with;
BRUCE HARRINGTON Days: 01-630 1433
Evenings (after 7p.m.): 01-701 5520

Lorien
COMPUTER SERVICES LTD.
We've got it!

Lorien Computer Services Ltd.,
Recruitment Consultants, Greencoat House,
Francis Street, London SW1P 1DH.

(8061)

Last year, we started a revolution in advanced automotive electronics by combining the outstanding expertise of both Lucas Electrical and Smiths Industries to form a new company – Lucas Electrical Electronics & Systems.

Now, we're proud to announce that the revolution is well under way, and we're continuing to break new ground in automotive electronics technology, developing the sophisticated in-car systems of the next century. Our success and our confidence in retaining the major share in a growing market has led to increased capital investment, and has created the need for additional specialists at our Engineering Centre in Witney, Oxfordshire.

As a result, we're looking for the following engineers to play a key role – and to share in a very bright future.

PROJECT MANAGERS

You'll take control of a dedicated team of engineers engaged in digital design and programming a range of microprocessors using the latest techniques for a variety of instrument applications.

You'll need a Degree/HNC or equivalent in a relevant discipline with at least 4-5 years' experience in digital design and microprocessor programming.

Ref. CW1

DEVELOPMENT ENGINEERS

To break new ground in the development of automotive electro-mechanical instruments and transducers.

Qualified to Degree/HNC level or equivalent, you must have sound experience in research and development associated with instrumentation or with the light engineering industry.

Ref. CW2

MICROPROCESSOR ENGINEERS

For digital design and programming a range of microprocessors using the latest techniques and languages for a variety of instrument applications.

Several years' experience including around 2 years in digital design and microprocessor programming is essential, and you should have a Degree/HNC or equivalent in a relevant discipline.

Ref. CW3

DISPLAY ENGINEERS

You'll be part of a team involved in one of these areas: 1) the design and development of state-of-the-art prototypes and pilot production processes for electronic display technologies, specifically LCD; 2) supervision, quality control, troubleshooting and some production engineering predominantly on LCD fabrication; 3) the design of display technologies applied to instrument systems, mainly for physical measurement; and research into the future applications of new technology.

In all cases, you'll need a Degree/HND or equivalent in physics, chemistry, materials science or other related discipline with 2 years' experience in Electronic Display technology.

Ref. CW4

ELECTRONICS ENGINEERS

To work on digital design and programming a range of microprocessors using the latest techniques for a variety of instrument applications.

You should have several years' experience including around 2 years in digital design and microprocessor programming, together with a Degree/HNC or equivalent in a relevant discipline.

Ref. CW5

TEAM LEADER (PCB/Thick film)

To lead a team of engineers in a PCB/Thick Film design drawing office.

You should be educated to Degree/HNC or equivalent with 4-5 years' experience in PCB/Thick film technology and some experience in CAD.

Ref. CW6

THICK FILM ENGINEER

To be involved in the design and development of thick film, with the emphasis on production processes.

A Degree/HNC or equivalent is essential, together with 2-3 years' experience in Thick Film production.

Ref. CW7

PCB/THICK FILM PROCESS ENGINEER

To work on the design and development of PCB's and Thick Films, with the emphasis on the production processes involved.

You'll need 2-3 years' experience in relevant production processes, together with a Degree/HNC or equivalent in a relevant discipline.

Ref. CW8

SOFTWARE ENGINEERS

You'll be joining one of a number of small project teams at various levels, working on the latest software using both high and low level languages.

You should have a Degree/HNC or equivalent and a background in application or system programming and experience in one or more of the following disciplines: interactive graphics, CAD/CAM, data communications, office automation, automatic test equipment.

Ref. CW9

MECHANICAL DESIGN ENGINEERS

For a new team to be responsible for initial product design incorporating the application of the latest electronic technology within mechanical assemblies and packages designed for high volume production.

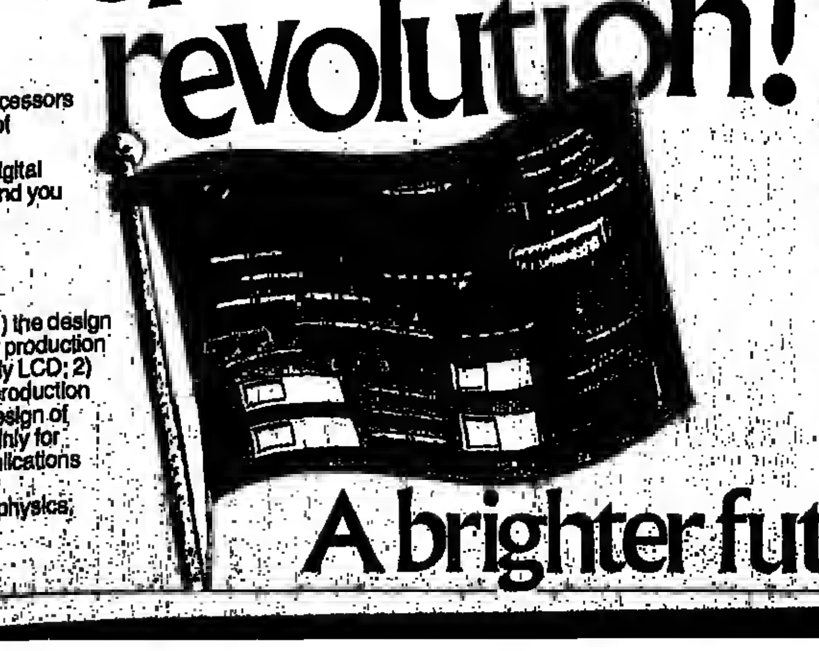
Qualified to Degree/HND or equivalent, you should have 2-3 years' relevant experience including a knowledge of CAD techniques.

Ref. DT10/EW10/IEE10/CW10/TE10/EN10.

We offer attractive salaries to match your qualifications and experience, together with the generous range of benefits to be expected of a major Group. If appropriate, we will provide first class guidance and an excellent financial package to assist with relocation to this superb, semi-rural Cotswold town. More important, however, are the superb opportunities that exist for you to develop a worthwhile career – and to secure your future by playing a key role in ours.

Please write, or telephone, quoting job reference number, between 8 a.m. and 7 p.m. to Sandra Jepson, Lucas Electrical Electronics & Systems Ltd., Witney Engineering Centre, Witney, Oxfordshire, OX8 5EX. Tel: 0993 75992.

Long live the electronics revolution!



Lucas Electrical

A brighter future for engineers

MVS/VM SYSTEMS PROGRAMMING

acf2
TECHNICAL ELEGANCE BY
SKK

- ★ Technical Support and Consultancy for major client installations.
- ★ Product Training in Chicago, USA.
- ★ European and USA user group meetings.
- ★ Technical excellence in the ultimate security of complex mainframe configurations.

SKK, with headquarters in Chicago, USA, are the authors of the renowned Systems Security Software – ACF2 (The Access Control Facility) which operates under the MVS, VM & VS1 operating systems. Founded over six years ago our growth continues with a user base of 200 in Europe, 80 + in the UK, with over 1,100 throughout the world.

We currently hava requiremants for Systems Programmers with practical experiance in some of the following areas: System Generation of MVS, VS1 or VM, SMP, JES, TSO, ASSEMBLER, Storage Dumps, IMS, CICS. ACF2 exparience is an added advantage. The ability to understand technical problams and be able to communicata their solution is of prime consideration.

You will be providing ACF2 support to an impressive list of major IBM installations. These positions are based in our Central London offices, where a dedicated team is engaged in responding to questions associated with the complexities of the IBM operating systems and other proprietory software program products as they relate to the ACF2 sacurity products. You may also aid in tachnical support within the UK and European marketing environment and customer education.

Thasa consultancy posts will afford the chosen individuals significant exposura to a wide range of software packages and tools in use within the IBM mainframe environment thus enabling continued technical advancement.

Positions also axist for individuals interested in working in France and/or Germany. Appropriate languages a prerequisite.

These are obviously unique and suparb opportunities for further developing your technical, business and communication skills, whilst working with experts on the most respected product of its kind in tha IBM market place.

SKK, a progressiva leader in an innovative field, offers qualified candidates with a strong desire to further their careera, compatitive salaries and comprahensive benefits including non-contributory life assurance and BUPA covar.

Send resume in strict confidenca to:
SKK (UK) Ltd., 140 Brompton Road, London SW3 1HY.
Attn: Office Manager

(7801)

Manufacturing Database

AMF Legg, a world leader in the manufacture of specialist processing equipment, is involved in a two year program to install a Manufacturing Database. This will run on a Honeywell OPS7 using the HMS Manufacturing Control System.

Analyst Programmer

(c.£10,500 + relocation where appropriate), aged 28-35 whose primary role within our MIS Department will be to lead one of the implementation teams. A sound knowledge of COBOL gained in a manufacturing environment would be an advantage.

Programmers

(not less than £8,000) - aged 25-32 who can offer at least two of the following:-

- * A minimum of 2 years' COBOL experience.
- * Experience of On-Line Transaction Programming.
- * Experience of Database Programming.
- * Knowledge of TOS and/or IDS II.
- * Experience on Honeywell Mainframe Equipment.

Senior Computer Operator - Shifts

(Salary negotiable), with a minimum of 2-3 years' experience, preferably on Honeywell mainframes, you should be conversant with operational aspects of Computer Operating Systems, System Utilities and JCL (to the extent of taking corrective action and carrying out restarts in the event of abnormal termination of processing) and be capable of assisting the Operations Supervisor in the optimisation of file-space etc. Afternoon and evening work-hours to be negotiated.

To the successful applicants we offer five weeks' holiday, pension scheme with free Life Assurance and participation in our staff bonus scheme.

Interested candidates should write with full personal and career details to:-

Chris Watford, Personnel Manager, AMF Legg (A Division of AMF International Limited), Newbury Road, Andover, Hampshire SP10 4DW, or telephone (0264) 62199 (Ext. 256) for an application form.

AMF
Legg

The IBM SYSTEM34/36/38 Recruitment Specialists

MARCH COMPUTER SYSTEMS LTD. one of the UK's leading software houses specializing in IBM Systems 34/36/38 now have the following openings:

RPG III Project Leaders Analyst/Programmers

RPG II Project Leaders Analyst/Programmers

Join us to work in our unique environment developing systems on our In-House Systems 36/38 for blue-chip clients in the UK and abroad:

Bespoke Systems

Multicurrency Distribution Package

MRP-II Software (Data-3 Package)

To apply please call **Richard Milsum** on **01-354 1055** during office hours or on **01-958 2553** during evenings and weekends. All response will be strictly confidential.

MARCH COMPUTER RECRUITMENT LTD
1 NOEL ROAD, LONDON N1 8HQ
01-354 1055

---

amda
MVS, SNA, VTAM, X25

TP Specialist Europe

WHATEVER NEXT?

For Amdahl, what comes next is probably the most exciting phase since our company was formed. As sales approach the billion dollar mark we are set to expand our TP products to provide a new dimension in communications technology.

Correspondingly we are seeking TP Specialists to spearhead the vital tasks of customer support, internal consultancy and new product introduction.

For you the question could be how to stay at the edge of communications development, expand your horizons into Europe or maximise your earnings. Amdahl can offer all three so, whatever you do next, check our requirements.

If you qualify, you could become part of a team recognised for providing the best support in the industry.

TP SPECIALIST

Have you reached the stage where you consider yourself a TP Specialist? Someone with the expertise to diagnose and resolve network problems? Can you provide technical assistance and guidance to colleagues -- and management? Are you ready to take these skills into a new and challenging environment?

If so here is an opportunity not to be missed ...

The European TP Specialist will be responsible for supporting customers utilising Amdahl's advanced 4705; a superbly designed communications processor which forms the foundation for a fully integrated network.

You should have sound hardware experience of 370, 3705 or equivalent, modems and 3270 products and be familiar with PTT's and 360 channel protocol. A good understanding of SNA, VTAM and NCP is essential, perhaps preceded by experience of MVS as a systems programmer or from practical debugging.

Mature and professional, you should have the ability to convey your ideas and concepts effectively, both to colleagues and customers.

These positions are based in **West London**, at the Amdahl European Support Centre. Regular travel to Europe and occasionally the Middle East and South Africa will be required.

To apply, contact our consultant, Francesca Drinkwater or write for an application form using the coupon below.

the amdahl phenomenon

D.P. Recruitment
A Dupont Computing Company SERVICES LIMITED
FREEPOST, LONDON W5 2BR TEL: 01-567 5501 (24 hour ansaphone)

NAME ______
ADDRESS ______
______
HOME TEL: ______ WORK TEL: ______

(7942) TK 234 W

REAL-TIME SYSTEMS OPPORTUNITIES

£8,000 to £15,000

We are seeking Graduates with at least two years experience to work with information and communications systems on commercial, industrial or government projects. The principal application areas are:

- ADVANCED COMMUNICATIONS IN PTT MARKET PLACE
- VIDEOTEX (PUBLIC AND PRIVATE)
- PROCESS CONTROL
- BANKING.
- LOCAL AREA NETWORKS
- DATABASE SYSTEMS
- MATHEMATICAL ANALYSIS STATISTICAL FILTERING
- AIR DEFENCE
- COMMUNICATIONS
  - -Message Switching
  - -Network Architecture
  - -HF and VHF
- ELECTRONIC WARFARE

Experience with the following hardware and software is of particular interest and would be a decided advantage:

- DEC VAX - PASCAL
- TANDEM - TAL, COBOL
- MOTOROLA 68000
- GEC 4000 - CORAL, BABBAGE

Successful applicants will work on a variety of company projects and may be involved in the development of exciting new products. There will be opportunities to travel and work abroad.

Senior Specialist Consultants: to £19,000

Extensive experience is required in:

- IBM EQUIPMENT IN THE AREA OF BANKING
- VERIFICATION AND VALIDATION TECHNOLOGY
- COMPUTER SECURITY
- IMAGE PROCESSING
- ELECTRONIC WARFARE

Some senior positions will include a company car.

The jobs offer modern office accommodation with easy access to London and the South Coast. An attractive range of benefits includes free BUPA, Permanent Health Insurance and an excellent Life Assurance linked Pension Plan. Generous help will be available with relocation.

If you feel you have the relevant requirements to join a top Systems Consultancy we would welcome a call on FREEFONE 3179 or, if you prefer, drop a line to Pamela Hayes-Jones at our Fleet headquarters.

Systems Designers Limited,
Systems House, 105 Fleet Road, Fleet, Hampshire. GU13 8NZ England
Telephone: Fleet (02514) 22161 Telex: 858280

Systems
Designers

صورة عن الأصل

Ferranti Computer Systems Ltd.

Defending the oceans with Software at sea

HAMPSHIRE

Each minute of the day, each day of the year, there are Ferranti ship control systems maintaining a constant vigilance over the oceans of the world.

This is all made possible by Ferranti's state-of-the-art real-time software.

Our advanced naval systems are used around the globe to enable highly trained service personnel to operate at optimum efficiency in data gathering, interpretation, weapon allocation and control.

Due to a continual expansion programme at our Portsmouth offices, we are looking for innovative and self motivated programmers with experience in design and development of real-time naval software to enhance our existing reputation of software supremacy at sea.

Although we require staff at all levels, you should have:

- Degree in a numerate subject
- At least 2 years experience in development of advance real-time computer systems using CORAL/MASCOT technology
- Some experience of PDP/VAX or Ferranti FM 1600/ARGUS hardware would be an advantage

In return for your expertise, we offer a competitive rewards package expected of an internationally successful company, in addition to which you could expect:

- * Generous relocation package (where applicable)
- * Productivity bonus scheme
- * Flexible working hours
- * 5 weeks annual holiday
- * Excellent career prospects
- * Friendly, informal team environment
- * Extensive on-the-job training facilities
- * Subsidised staff restaurant

We are located in a pleasant part of Hampshire, close to both coast and countryside which provides the ideal environment for recreational and sporting facilities.

So if you're a software specialist, make sure you speak to Ferranti first.

Call Elaine Britton on Portsmouth (0705) 383101 Ext 3239, or write to her at: Personnel Department, Ferranti Computer Systems Ltd., Mountbatten House, Station Road, Cosham, Portsmouth, Hants P06 1UD, quoting reference P/932/CW.

(7669)

FERRANTI

Selling technology

Software Manager

Computer Aided Engineering

£17-£19k + Car Near Cambridge

A major supplier of Computer Aided Engineering systems whose broad base of expertise covers a uniquely wide range of engineering applications from solid modelling to sales order processing have a need for a Software Engineering Manager. As a member of the senior management team he or she will report directly to the Managing Director of this progressive company whose innovative approach to the integration of CAD/CAM, manufacturing and business systems has secured its position amongst the market leaders.

The successful candidate will be responsible for all of the company's application programmers, systems analysts and systems programmers. These currently operate as three teams covering Commercial Applications, Technical Applications and Systems Software. Major development of the company's own products, enhancement of third party software and bespoke projects are being undertaken in all three areas.

The appointed candidate will be a software professional with extensive experience of managing software development who is fully conversant with structured design and programming techniques and with common standards implementation. Applications experience will have been gained in CAD/CAM, manufacturing or commercial systems preferably in an engineering environment.

A significant amount of time will be spent in liaison with first line management regarding the cost effectiveness of new product development and bespoke projects as well as ensuring that a professional and efficient service is provided to the company's marketing department and its customers.

This is an excellent opportunity for a dynamic individual with extensive software and management experience to employ his skills in a highly visible senior management position.

Please reply to: Jim Wallis:
office day: 01-741 8011
office night: 01-748 1987/1975/2160
home: 01-894 0182

CADsearch, London House,
271-273 King Street, London W6 9LZ.

(7866)

CADsearch

PROGRAMMERS

HERTS **SALARY NEG**

Photo Trade Processing Limited, a major autonomous division of Dixons Photographic Group, is one of Europe's largest film processors. We use a large range of DEC and Apple hardware and our computer systems are extending into all areas of our business.

We wish to recruit Computer Programmers with sound experience of Basic+ and Basic+2 under RSTS/E.

The successful applicants will join a small professional team engaged on the development and maintenance of systems in an F.M.C.G. environment.

These are management appointments and employment conditions are excellent as one would expect in a major public company.

Please send comprehensive c.v. including current or expected salary level, to:

M. J. Staines, Senior Personnel Officer
PHOTO TRADE PROCESSING LTD.
Argyle Way, Stevenage
Herts SG1 2AR

(7900)

INTEL 80/86 ASSEMBLER REAL TIME PROGRAMMERS

KPG
01-948 5922

Ring Wendy Howard at
KPG on 01-907 1767
(Eves and Weekends)

(8050)

URGENT CONTRACTS

VAX/FORTRAN/SYSTEL	NOW
UNIVAC/TIP/OMS/COBOL	MAR/APR/MAY
VAX/FORTRAN (VARIOUS CONTRACTS)	NOW
VAX/OPS. LIBRARIAN	MARCH
PASCAL (VAX or PDP 11)	NOW
IBM/MVS/CICS/COBAL/BAL	NOW
HP3000/COBOL	NOW
IBM/MARK IV	NOW
IBM/FORTRAN	NOW
DG/FORTRAN/COBOL	MARCH/APRIL
IBM/RAMIS or FOCUS	NOW
IBM/MSA OR EIS PACKAGES	SOON

MONTREAL ASSOCIATES (Systems) LTD.
98-100 High Road, Ilford, Essex 1G1 1DS
TEL: 01-883 2944 (4 lines) Emp. Agy.

(8048)

FOR CLASSIFIED ADVERTISING USE DIRECT LINES

RECRUITMENT CONSULTANCIES
(01) 661 8787

DIRECT ADVERTISERS
(01) 661 8080

SOUTHAMPTON

up to £16K

Project Controller
Senior Systems Designer
Senior Systems Programmer
Senior Analyst Programmer
Information Services Officer
Analyst Programmer
Programmer

Starting salaries dependent on specific post available [details of which are in our information package] and experience and qualifications of individual candidate.

We are a large, dynamic organisation currently embarking on an expansion programme and are seeking to recruit a number of experienced personnel in TP and Database Support; Systems Programming; Operations Support; Mainframe Systems Development and Office Automation. Current details of our installation are shown below:–

- ☐ I.B.M. 308X Processors
- ☐ 3380 Disks
- ☐ MVS SP [XA planned 1984/5]
- ☐ One of the largest CICS based TP systems in UK.
- ☐ PL/I, COBOL and high level development aids
- ☐ SNA network supporting over 700 terminals
- ☐ DL1 databases
- ☐ Personal computing [Mainframe and Micro]
- ☐ Office automation [new development]

If you are interested, please write to the Senior Personnel Officer, Southern Gas, 80 St. Mary's Road, Southampton for an information package or ring us anytime on Southampton 31818, quoting reference P.6.

SOUTHERN GAS

KEY POSITION IN OUR DEVELOPMENT PROGRAM

GEC-Jerrold is a young fast growing high technology company with £multi-million contracts in Teleconferencing and Cable TV systems.

MANAGER COMPUTING SYSTEMS

We require a systems manager to provide a service to the company which will not only keep pace with our fast growing order book but will ensure that peak efficiency is maintained aided by the most appropriate computer equipment, computer aids and software for both commercial and engineering requirements.

Mastery of current hardware and software developments is essential, together with the capability of successfully tailoring these to meet company requirements and staff capabilities with appropriate consultation and training programmes as required.

Ideally candidates will be qualified with BSc (Hons) Computer Science or equivalent together with several years' experience in an engineering or scientific computing environment, age 28 – 35.

Top salary with attractive fringe benefits will be offered for the right person.

Please apply giving full details of age, qualifications, experience and salary to:-

Miss E.M. Scoble GEC-Jerrold Ltd 642-643 Ajax Avenue Slough SL1 4BG. Telephone: (0753) 821671

(8005)

GEC JERROLD

We have recently completed a Systems Planning exercise in support of the Group's ambitious business plan. Our strategy requires the implementation of new real-time transaction processing and office automation services throughout the Group by the end of 1986, based on a policy of distributed mini and micro processors.

These new systems will be developed using PROMPT project management and YOURDON – based structured analysis and design methods, to which management is fully committed. We require someone, probably currently at Senior Analyst or Project Leader level with experience in using similar methods, to oversee the implementation of these standards and to direct the training of departmental staff. It is expected that success in this position will lead to a more senior project management role.

STANDARDS AND TRAINING

c. £15,000

هكذا من الأصل

Stewart Wrightson

International Insurance Brokers

This position, which includes attractive additional benefits, offers excellent career prospects within a young, progressive development environment. For further information contact Mike Kelly, Systems Development Manager, on 01-623 7511 or write to him, enclosing a current c.v., to Stewart Wrightson, 1 Camomile Street, London EC3A 7HJ.

JOBS IN YORKSHIRE AND THE NORTH-EAST

Positions left vacant during the recession are being repopulated as the area enjoys an upturn, reports Keith Holder

Job hunters can score in the North

RECRUITMENT prospects in Yorkshire and the North-east, like the career of one of the area's celebrity cricketers, have taken a turn for the better.

This is not to imply that all is rosy for the job hunter, but most of the area's recruitment agencies and employers report an upturn over the last six months, thanks to a lessening of the effects of the recession.

This has led to demand created both by new posts, and the repopulation of positions left vacant in a bid by some employers to reduce costs.

The recovery is not uniform. Some sectors, mainly concerned with government or public installations, remain static, though there is apparently no worsening of prospects in this sector.

A spokesman for South Yorkshire County Council DP department, which has a staff of 60, says: "We operate a fixed establishment, and only recruit when someone leaves". The exception to this rule was the occasional appointment of a trainee under the government's job opportunities programme. There is only one such place planned for this year, and the appointments last only 12 months.

He adds that the recession has made people wary of leaving a job which offers security, resulting in a low staff turnover. This point was echoed by many similar establishments.

The Central Electricity Generating Board's policy is to take on only experienced programmers and analysts who have already worked in the power supply industry. There is a chance for graduates, says a spokesman, though recruitment for these takes place at the Board's London headquarters. The reason for the Board's policy is a programme of centralisation, now in progress. In any event, staff movement is limited, for much the same reasons as given by the County Council.

The main areas of growth are the engineering, manufacturing and commercial sectors.

A number of firms in these industries say that the sharp upturn in demand is a result of a real growth in requirement, not just replacement of staff.

Empire Stores, which has 550 staff, is recruiting at all levels at present, but they can afford to be choosy, and demand a high degree of experience.

But even in these more affluent sectors there is a general lack of movement. This, says Tony Roberts, managing director of OCC Computer Personnel (Nantwich), may account for another Northern phenomenon: lack of moderately experienced people looking for new posts.

This is caused, Roberts believes, because staff tend to be promoted within the same organisation, and because with companies having to cut staff levels in the past, there has been no training ground for the next generation.

Roberts says this has created an as yet unfilled gap in the labour pool, which could profitably be exploited.

The recession has also had its effect on the type of staff required. Tony Close, of KSS Computer Services, says organisations are now more interested in "generalists", with experience of a number of machines, or programmer/analyst/operator staff who could turn their hands to a number of jobs.

This demand has been enhanced, he adds, by the number of medium and small-sized companies setting up computer departments running mini- or microcomputer-based systems. Networks and distributed systems are also becoming an accepted method for small businesses, he says.

People with this type of experience are a scarce commodity, and anyone who can fit the bill would not find himself jobless for long.

The proportion of non-IBM installations is substantially higher in the North than in other areas. IBM has the lion's share of the larger installations, but in terms of number of sites, ICL, Burroughs, Sperry and Digital Equipment have all made a substantial impact.

This is due to the higher proportion of scientific and engineering companies in the area.

Close says that of the specialised areas, computer aided design/manufacture (CAD/CAM) is showing a slow but improving growth rate.

All is not lost for the traditional programmers, analysts and operators, says Dereck Batchelor, contract sales manager for Computer People North.

There is a high demand for contract staff in all areas of expertise, particularly for those with experience in retail, distribution and financial installations.

Again, recovery from the recession is behind the trend, as companies experiencing a sudden upturn in business scramble to bring their staffs up to full strength, but are wary of saddling themselves with difficult-to-dispose-of permanent staff.

Even so, says Batchelor, there is a new trend for contract employees. Preference is now for staff with teleprocessing and real time experience. Demand is also up for staff to work in analytical applications.

Although mainframe experience is still in demand, there is a noticeable increase in vacancies for staff familiar with smaller models, such as IBM's System 34 and 38, says Close.

On the software side, RPG 2 and 3, CICS, DL/I and Cobol are the front-runners.

Michael O'Gorman, computer development manager for Bradford and Bingley Building Society, says his department is increasing by about 10 staff. But, now that the business sector in the North is on the mend, there is a shortage of suitable candidates.

"In Yorkshire, you have to attract people in, even though we offer a good training scheme," says O'Gorman.

Roberts sums up with the comment, that, though the area is probably showing an artificially high rate of growth due to companies catching up with less depressed areas, the underlying trend is still upwards.

Like those of a famous Yorkshire cricketer, prospects are looking up.

> "Now that the business sector in the North is on the mend there is a real shortage of suitable candidates. In Yorkshire you have to attract people in, even though we offer a good training scheme"

Batchelors is investing heavily in new, integrated systems which are forming an increasingly important part of the Company's operations. We are introducing on-line systems across three sites, through a network of IBM 4300s operating under DOS/VSE. We now have a vacancy at our Head Office in Sheffield.

DESIGNER PROGRAMMER

This is an excellent opportunity for an experienced designer/programmer with a sound knowledge of CICS/DL1 and COBOL to develop skills within our busy development team. You will assist in the specification and design of systems/databases, fulfilling an essential role between the business and technical functions in the Business Systems Department.

Three to four years' programming/design experience is required and experience of working in an application team environment and knowledge of UFO would be an advantage. We offer excellent benefits and conditions of service, including flexible working hours and 25 days' annual holiday. Some assistance with relocation may be offered where appropriate.

Please write giving details of your experience to date to:

Lynn Brothers
Staff Officer
Batchelors Foods Limited
Wadsley Bridge
Sheffield S6 1NG

(6857)

Batchelors
for good food

ALTOS + PICK
..... in UNISON

Unison Technology PLC is a new subsidiary of leading UK PICK specialists Interactive Data Machines Ltd. and has been recently formed to market in the UK and throughout Europe, the powerful combination of the Altos range of Microcomputers with the PICK operating system. Outstanding opportunities exist to play a major and influential role in this important new company.

SALES EXECUTIVES c. £45K+

The successful applicants will already be enjoying considerable success in the multi-user business computer market, as a result of an energetic and highly professional approach. An excellent basic salary and commission plus an attractive over-quota bonus scheme will ensure high rewards for high calibre performance.

Positions are based in either the North or South of England.

Usual large company benefits include 2-Litre Car, Pension Scheme, Medical Insurance, etc.

TECHNICAL SUPPORT MANAGER c. £15K

Based in London, this position demands an excellent knowledge of PICK and experience in the pre and post sales environment.

The successful candidate will combine a business-like appearance with well developed communication skills and will welcome the challenge of supporting PICK in a fast growing, stimulating and already successful company.

Please send applications together with current cv to:

UNISON

Ann Foster
Unison Technology PLC
Ornhams Hall
Nr. Boroughbridge
Yorks YO5 9JH

Tel: 09012 2027

هكذا من الأصل

JOBS IN YORKSHIRE AND THE NORTH-EAST

Product Development Manager
Expert Systems

This is an excellent opportunity for an experienced software product manager to move into one of the growth areas of the next decade. The successful applicant will assume responsibility for the development of a product range, leading a team of knowledge engineers, system engineers and programmers. Management experience in a company producing software products is essential. As a key appointment in a new section of our company this post will carry a first rate salary and benefits package. Our development section is located in a science park next to a pleasant university campus, with full access for our staff to sporting and social facilities. The Yorkshire Dales are within easy commuting distance.

bit

Please send your CV to Cathy Jones, Company Secretary,
BIT Business Information Techniques Limited,
Bradford University Science Park, 12 Campus Road, Bradford, West Yorkshire BD7 1HR

Knowledge Engineers/Expert Systems/Management Consultants/
Conference Organisers/Publishers

WOULD YOU LIKE TO RUN YOUR OWN BUSINESS?

The Evolution Franchise Group is looking for experienced computer personnel with sales and/or software experience. We will:-

- *Organise Premises*
- *Provide training*
- *Assist in staff recruitment*
- *Help raise finance (a total investment of between £30K-£40K is envisaged to include a micro networking system).*

The franchise group is based on the highly innovative SYNERGY Software. SYNERGY is a document based system with all standard application modules which also integrates with WP Systems, Spreadsheets and Databases. SYNERGY will operate in multi-user and networking environments.

If you are interested call David Booth on
0274-309924
for further details.

(7959)

evolution
BUSINESS COMPUTER SYSTEMS

THE UNIVERSITY OF LEEDS
OFFICE OF THE REGISTRAR

COMPUTING ASSISTANT (PROGRAMMER)

An experienced COBOL Programmer is required to join a small team of analysts and programmers working in the Administrative Computer Unit. This Unit currently maintains an interesting range of batch and on-line systems on an ICL 2904/50 and an ICL ME29/37, and new on-line work is being actively developed.

For this post experience in an environment including microcomputer or large on-line mainframes would be equally valuable.

The starting salary is at an appropriate point on the IS Grade of the scale for Administrative staff (£6310-£9875) according to age, qualifications and experience.

Applications forms and further particulars may be obtained from the Registrar, the University of Leeds LS2 9JT, quoting reference no. 118/39A2. Closing date for applications 15 March, 1984.

(8014)

COMPUTER PROGRAMMER

SALARY £7000

Walter Willson Limited, a North-East based multiple grocery firm, wish to strengthen their data processing department.

The Company operate a Burrough's B29-30 and are looking for applicants who have a minimum of twelve months experience, preferably on the above computer.

In addition, it would be beneficial if applicants also have spent some time on data-based systems.

If you are seeking a fresh stimulus and would like further information about this vacancy, contact Mr. L. Gordon,
Personnel Manager,
Walter Willson Ltd.,
Rockland House, Earlsway,
T.V.T.E., Gateshead,
Tyne & Wear, NE11 0TB.
Telephone Low Fell: 875056

Walter Willson

FOR
CLASSIFIED
ADVERTISING USE
DIRECT LINES

RECRUITMENT CONSULTANCIES
(01) 661 8787

DIRECT ADVERTISERS
(01) 661 8080

Programme Audit Software
Keep your Career Options Open

To £11,500

London and Swindon

Primarily concerned with prestigious department stores, this public company has recently established a small DP Audit Team, to enhance the operational and financial effectiveness of its corporate audit function. You will have the unique opportunity to view all aspects of the company's nationwide business and advanced computer developments, using a range of ICL, Honeywell and IBM equipment.

Your responsibility as Programmer is essential for further DP Audit development and requires a mature personality and business awareness. You will be programming to produce audit software, using audit packages and Cobol programs. Although based in central London, you will regularly work independently at the group computer centre in Swindon.

Ideally you should have 18 months commercial programming using Cobol on ICL 2900 under VME/B, with a good working knowledge of MAC, and preferably experience of IDMSX database and general ICL utilities. You will be encouraged to advance your career by in-house and external training, and have an exciting range of promotion opportunities.

Attractive benefits include a 9-5 working day, staff discount, free lunches, travel and hotel expenses. **Candidates will be considered from either London or Swindon locations.**

To arrange an early interview, phone Susan Atkinson of Cripps, Sears & Associates Ltd., Personnel Consultants, 88-89 High Holborn, London WC1V 6LH. Tel: 01-404 5701 (daytime) or 01-638 1580 (evenings or weekends).

Cripps, Sears

SUPPORT ENGINEER

TANDON INTERNATIONAL, the leading manufacturer of small disk drives, require a SUPPORT ENGINEER to work from their Reading facility.

Applicants should have practical experience with both floppy and Winchester drives including in-depth knowledge of digital magnetic recording principles.

SALARY c £11,000 pa. Other benefits include company car, BUPA, holiday bonus.

PLEASE CONTACT Sharon Ranew

Tandon

Reading (0734) 664676

(8040)

IMMEDIATE SHORT TERM CONTRACTS

IBM PROGRAMMERS WITH MINIMUM
3 YEARS' EXPERIENCE

TELEPHONE URGENTLY BEN LEVENE IMS DB/DC
COMPUTALINK LIMITED ON:
LUTON (0582) 28784/454235 (office hours)
WATFORD (0923) 29956 (any other time)

(8038)

Sales Support with AARQUE

AARQUE SYSTEMS LIMITED

...tomorrow's Drawing Office technology – today.

c. £11K

London & Derby

Aarque Systems Limited are a leading supplier of equipment and materials to drawing offices and print rooms with products ranging from the most sophisticated reprographic systems to drafting materials. They are both manufacturers and distributors in the U.K, with a head office at Colnbrook, two regional depots, 13 branch offices and 13 print shops, employing a total of 800 people.

Computer Aided Design and Drafting (CADD) has been available in the U.K. for many years but has traditionally been reliant upon large and expensive computers which has meant that the majority of drawing offices still rely on manual methods of drafting. With the recent dramatic growth in the sophistication of micro-computers, practical CADD systems are becoming available at a fraction of the previous cost bringing these systems within the affordable reach of even the smallest drawing office.

Aarque are forming a new division which will market a complete range of low cost micro-computer based CADD systems. Initially, Aarque CAD centres will be in London and Derby and plans are well advanced for other locations.

Their sales philosophy is to provide 'hands on' demonstration facilities for potential clients at local showrooms where there will be a number of different systems on display.

The Sales Support Engineer will give demonstrations and liaise closely with potential customers regarding their specific requirements. Experience of design/drawing office practices and a knowledge of micro-computers is therefore highly desirable.

Major company benefits will also complete the attractive package – including BUPA; Pension Scheme; Company Car, etc.

For more details of these exciting opportunities please contact: Jim Wallis.

office day: 01-741 8011
office night: 01-748 1987/1975/2160
home: 01-894 0182

CADsearch, London House,
271-273 King Street, London W6 9LZ.

CADsearch

PUBLIC SECTOR APPOINTMENTS

M R C CLINICAL RESEARCH CENTRE
(NORTHWICK PARK HOSPITAL)
WATFORD ROAD, HARROW
MIDDLESEX HA1 3UJ

crc

MEDICAL RESEARCH COUNCIL

HEAD OF COMPUTING AND STATISTICS DIVISION

Applications are invited for this senior post at the Medical Research Council's Clinical Research Centre in association with Northwick Park Hospital.

The person appointed will be required to head the computing and statistics service provided to the staff of the Centre and to maintain a close association with the computing service of Northwick Park Hospital.

The appointee will have overall responsibility for the research direction of the division and will be expected to carry out a personal research programme. Candidates should be of high scientific standing, should have a substantial background in computer science and the application of computer technology to biological and medical research.

The Clinical Research Centre may be visited by direct appointment and prospective candidates should discuss details of the post with the Director, Sir Christopher Booth.

Further particulars can be obtained from the Director's Office, Clinical Research Centre, Watford Road, Harrow HA1 3UJ. Telephone 01-864-5311, ext. 2220.

Closing date for applications: 17th March 1984

TEST VALLEY
BOROUGH COUNCIL

PROGRAMMER/ ASSISTANT OPERATOR

£7,181 to £7,896 per annum
(Starting point negotiable)

The Council has recently taken delivery of an ICL ME.29/37 processor with a network of D.R.S. terminals covering a number of remote sites.

This new post has been created in the Finance department, based at Andover, to assist in the development of new applications in addition to aiding in the maintenance of an operational network.

The successful applicant will have sound operational experience of an ME.29 and a minimum of 12 months' experience of COBOL.

An attractive package is offered, including an essential user car allowance, together with relocation assistance and membership of a Group Life Assurance Scheme.

Informal telephone enquiries regarding the post would be welcomed by Mike Madhurst, Assistant Borough Treasurer (Ext. 238) or Colin Beale, Data Systems Officer (Ext. 227) on Andover (0264) 64144.

For application form and job description please contact the Personnel Officer, Council Offices, Duttons Road, Romsey, Hants (Telephone: Romsey 515117, Ext. 553). Closing date for return of application forms Friday, 9th March 1984. (8034)

NETWORK CONTROLLERS

LONDON SW17

£6,712-£11,873

South West Thames Regional Health Authority have a requirement for experienced Network Controllers to join a rapidly expanding group dealing with the installation, maintenance and administration of a fast growing communications network. Candidates should have a minimum of six months' experience working within a network control environment and be conversant with equipment, principles and conventions relating to such an environment. He/she will also have experience of liaising with British Telecom and suppliers and users of telecommunications and terminal equipment. The positions will initially be days only but extended hours working may be required in the future.

Appointments will be made at a grade and salary level appropriate to the applicant's experience and qualifications.

For further details contact:

Keith Fox
Communications Network Manager
S.W.T.R.H.A.
Regional Computer Centre
Springfield Hospital
Glenburnie Road
Tooting, London SW17 7DJ. 01-672 9988 (7966)

Information Engineer

c £10,000

The Management Information Section is a highly motivated group providing key information to all levels of management throughout the Surveyor's Department. A wide variety of techniques are available, including Critical Path, Staff Diaries and Resource Management, using VAX and IBM machines through remote terminals.

Your role will be

1. To co-ordinate the flow of information needed for effective decision making.
2. To advise on the organisation of technical systems (for which engineering expertise is an advantage).
3. To assist in setting up new information systems (for which computing expertise is an advantage).

For this senior position you should be a Chartered Engineer with computing experience or a qualified Computer Specialist with suitable experience in a highways department.

A relocation expenses package is payable in approved cases.

For more information and application form telephone Chichester (0243) 777973 quoting reference SQ 101 or write to County Surveyor, County Hall, Chichester, PO19 1RH. Closing date 19th March, 1984.

West Sussex
COUNTY COUNCIL

DURHAM UNIVERSITY
Department of Engineering

SENIOR RESEARCH ASSISTANT

Applications are invited for two SENIOR RESEARCH ASSISTANTSHIPS in the field of electrical power system control to join an established research group concerned with the development of algorithms and corresponding software for online computer monitoring and control of power systems. The research programme is supported by several major industrial organisations and the SERC. Applicants should hold a good honours degree or equivalent in electrical or electronic engineering with research and/or industrial experience in computer control or power systems analysis. The posts are initially tenable for two years and one year respectively on scale 1A £7,190 to £11,615.

Applications (three copies) naming three referees should be sent by 8 March 1984 to the Registrar, Science Laboratories, South Road, Durham DH1 3LE, from whom further particulars may be obtained. (7957)

LECTURERS

SALARIES NEGOTIABLE

KBS Training is a major provider of training courses to both Government and Industry, having been established since 1969.

We will shortly have permanent vacancies for the following lecturing staff:

Systems Analyst London based
Programmer (PL1/CICS) London based
Programmer (RPGII) Liverpool based
Analyst/Programmer (Micro Cobol & Basic) London and Liverpool based

Although previous lecturing experience would be an advantage, this is secondary to the possession of solid experience, self-confidence and enthusiasm.

The company offers an excellent benefits package, including pension scheme, BUPA, generous holidays and twice-yearly salary review.

Please telephone Mrs J. Jones in our Liverpool office (051-236 2869) for an Application Form. (8010)

SCOTTISH HEALTH SERVICE
WEST COAST INFORMATION SERVICES CONSORTIUM

Systems Designer/Programmer

(2 posts)

Scale 5: £8,387-£10,277 OR Scale 4: £7,404-£9,025
(depending on experience)

Based in the Consortium's Headquarters in Paisley, two new temporary posts for an initial period of three years, to develop and support a package for use in G.P. doctors' surgeries. The package will run on a variety of micros and the application will have links to the population index on an ICL mainframe computer.

System design and programming experience required for both posts with a minimum of three to four years for Scale 5. Experience with micro and/or minis would be an advantage. May involve travel throughout Scotland.

Application forms and further particulars from the Area Personnel Officer, Argyll and Clyde Health Board, Gilmour House, Paisley PA1 1DU (Telephone: 041-887 0131, Extension 322). Closing date March 8, 1984. (8037)

GRAVESHAM BOROUGH COUNCIL

ASSISTANT COMPUTER MANAGER

£10,242-£11,052

We are seeking an experienced systems specialist to fill this important post which ranks second in the Computer Section.

Gravesham uses both ICL and Microdata processors. All new development is carried out on the Microdata SEQUOIA and 41 interactive terminals are spread throughout the Council's departments.

The successful applicant will head a team of four development staff and deputise for the Computer Manager.

Gravesham, bordering the Thames in North Kent, is within easy reach of London and the coast. Relocation expenses will be paid where appropriate.

For application form and job description please contact Personnel Officer, Civic Centre, Gravesend. Tel: Gravesend (0474) 64422, extension 273. Closing date 9th March, 1984. (7959)

GLC
Working for London

Computer Auditor

Computers play an increasingly important role in many areas of the GLC/ILEA's operations. The main computer installation currently centres around an IBM 3081 and 3033 running under MVS, with extensive teleprocessing facilities to over 500 terminals. There is also considerable and expanding use of small computers and local area networks.

To meet this challenge the Audit Branch is building up a small specialist Computer Audit team consisting of both accountants and data-processing professionals.

One vacancy remains for a qualified accountant with a sound grasp of information systems and technology to plan and carry out audits of accounting and other systems and the related development activities and to contribute to the development of audit techniques in line with continuous systems update.

An awareness of the financial and management processes of a large public body, a thorough understanding of audit aims and principles are essential together with tact and the ability to communicate effectively at all levels. This post is suitable for job sharing.

Salary: £12,336-£13,872 inclusive.

For an application form, to be returned by 9th March 1984, write to: Finance Department, Greater London Council, Room 296, The County Hall, SE1 7PB or telephone 01-633 3669.

The GLC welcomes applicants from all sections of the community, irrespective of their sex, ethnic origin, colour, sexual orientation or disability, if they have the necessary attributes to do the job.

The GLC is an equal opportunities employer

University of Southampton
DEPARTMENT OF COMPUTER STUDIES

SYSTEMS PROGRAMMER

(Temporary)

Applications are invited for the post of Systems Programmer in the Department. The person appointed will maintain and develop systems software for the department's three UNIX systems (DEC PDP11/34, Zilog S-8000 and PE 3205), and develop software to assist the Department's teaching and research programmes. Fluency in programming in a high-level language such as Pascal or C is essential; experience of UNIX is desirable.

The post is available until 30 September, 1985. Salary on Scale 1A, between £7190 and £8530, dependent on age and experience.

Applications (4 copies) should be sent to Mrs. E. C. P. Sears, Staffing Department, University of Southampton, Highfield, Southampton SO9 5NH, not later than 15 March, 1984. Please quote reference 1808/P/CW. (7968)

THE UNIVERSITY OF LEEDS
OFFICE OF THE REGISTRAR

COMPUTING ASSISTANT (PROGRAMMER)

An experienced COBOL Programmer is required to join a small team of analysts and programmers working in the Administrative Computer Unit. This Unit currently maintains an interesting range of batch and on-line systems on an ICL 2904/50 and an ICL ME29/37, and new on-line work is being actively developed.

For this post experience in an environment including microcomputer or large on-line mainframes would be equally valuable.

The starting salary is at an appropriate point on the IB Grade of the scale for Administrative staff (£6310-£9875) according to age, qualifications and experience.

Application forms and further particulars may be obtained from the Registrar, the University of Leeds LS2 9JT, quoting reference no. 118/39A2. Closing date for applications 15 March, 1984. (8014)

THE UNIVERSITY OF LANCASTER
Department of Computing

Systems and Applications Programmers

In the first stage of a major expansion of the University's Computing Service, four new programming posts have been created. Three of these posts will be permanent and the other for a period of five years. The primary responsibilities associated with the posts are support and development of the following areas:

Post 1: VME System on the ICL 2966
Post 2: VMS System on the Digital VAX 11/780
Post 3: Graphics
Post 4: External facilities, particularly those provided by the University of Manchester Regional Computer Centre (5-year fixed term)

We require people with a positive and imaginative approach to developing a computing service for a large number of users by exploiting existing skills in the above areas. Such people with expertise in any of these areas are especially welcome.

Salary on the Other Related 1A range (£7,190 £11,615 per annum).

Further particulars may be obtained (quoting reference LO(7/D)) from the Establishment Office, University House, Bailrigg, Lancaster LA1 4YW, where applications (five copies) naming three referees, should be sent NOT LATER THAN MARCH 9, 1984. (8006)

LEICESTER POLYTECHNIC
SCHOOL OF MATHEMATICS COMPUTING AND STATISTICS

TECHNICIAN

(INFORMATION TECHNOLOGY)

SALARY SCALE 3
£5640 to £6135 per annum

Required to provide technical assistance in the laboratories, either renovating and maintaining hardware or in developing and demonstrating software. It is expected that the successful applicant will have an appropriate HNC or HND.

Application forms and further particulars are available from the Personnel Officer, Leicester Polytechnic, PO Box 143, Leicester LE1 9BH. Tel: Leicester (0533) 551551, Ext. 2303. (8033)

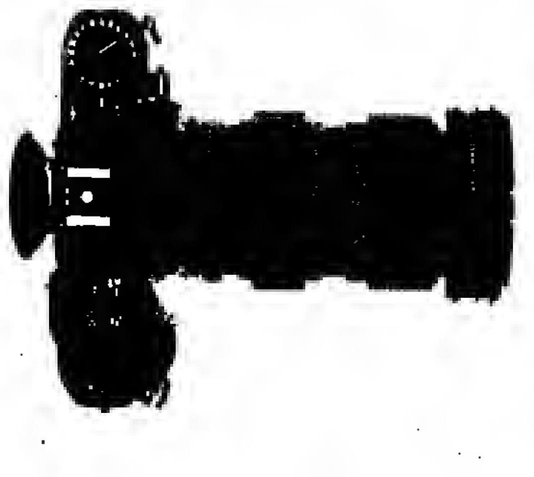
KINGSTON POLYTECHNIC
School of Electronic Engineering and Computer Science

RESEARCH COMPUTING OFFICER

A post is available in a small research group in the School working on the computer-aided design of engineering systems. The project is funded by the Science and Engineering Research Council and is being carried out jointly with Imperial College, London, and the University of California, Berkeley. The person appointed will take part in the design and development of an advanced interactive design support environment using the sophisticated graphical facilities of the ICL PERQ personal computer acting as a workstation to a VAX 11/750, both running UNIX. An interest in computer-aided design, man-machine interfaces, especially graphical interaction techniques and their application to engineering system design, is essential and experience in one or more of these areas would be an advantage.

Initial salary will be in the range of £9,657 pa, including London allowance. Appointment in the first instance will be for a period of up to three years. Registration for a higher degree would be encouraged where appropriate.

Details and application forms from Academic Registry, Dept. AO, Kingston Polytechnic, Penrhyn Road, Kingston upon Thames KT1 2EE. Tel: 01-549 1366 ext 815. (7964)



ILFORD

Ilford — part of the CIBA GEIGY GROUP — is one of the most respected names in photography. We have just completed a 30 million pound investment to concentrate all our UK manufacturing on to one 50 acre site at Mobberley – a rural Cheshire village within easy access of Manchester. Having made the Mobberley site one of the most modern in the photographic industry we can now streamline our existing computer systems, currently based on Honeywell DPS/100 mainframe and level 6 mini computers. A number of challenging on-line and database projects are about to commence which will utilise Honeywell DMIV/TP software. Reorganisation of the computer department to cater for this major expansion has created the following opportunities for computer professionals.

ANALYST/PROGRAMMER £8,500-£10,700

You should have a good COBOL programming background, ideally gained in a mainframe environment and be experienced in the design of commercial systems using database software.

A PROFESSIONAL APPROACH

COBOL PROGRAMMERS £7,200-£9,000

A good COBOL background is required, ideally gained in a mainframe environment. Knowledge of database techniques is a definite advantage but applicants with good on-line skills will have the opportunity of gaining database experience.

Full details of these excellent career opportunities are available by telephoning Graham Pepper 061 491 1666 (day time) or Adlington (0257 480291 (eves/wknds). Alternatively write to him at Computer People North, FREEPOST, Sovereign House, Stockport Rd, Cheadle, Cheshire, SK8 2YD.

Name...
Address..
Tel: (day)..........................(even/wknds)..............................

VLI Computer People North

●01-836 8411 Computer People London, VLI House, 68-69 St Martin's Lane, London WC2N 4JS ●01-680 4013 Computer People South, 27 George Street, Croydon CR0 1LB ●021-643 8501 Computer People Midlands, Alpha Tower, Birmingham B1 1TT ●061-491 1666 Computer People North, Sovereign House, Stockport Road, Cheadle, Cheshire SK8 2EA ●01-836 8411 Computer People International, VLI House, 68-69 St Martin's Lane, London WC2N 4JS ●01-836 8411 CoOperators, VLI House, 68-69 St Martin's Lane, London WC2N 4JS ●021-643 6732 Sales People, Alpha Tower, Birmingham B1 1TT ●also offices in New York, Kentucky and Los Angeles

The Market Leaders

A SMALL STEP ...OR A GIANT LEAP?

Fourth generation software is only one step. Our Client is a household name. Operating internationally in the production and distribution of consumer products calls for the latest techniques. Their plan to introduce major new developments is being implemented now. They will be using fourth generation tools, using the latest data analysis techniques for new bespoke applications in marketing and distribution. Their need for additional skills gives you an opportunity to be really involved. Your career could take a giant leap into the future.

CHIEF DESIGNER c£15,000

This is a senior appointment involving teleprocessing, database systems and data analysis.

Applicants must have had at least five years experience in these areas. Detailed experience of system design using IDMS is essential, preferably in an IBM environment, but good candidates from a VME environment will be acceptable. Knowledge of CICS and ADS/O would be an advantage, as would exposure to the techniques of data analysis.

PROJECT LEADERS c£15,000

This too is a senior appointment and calls for at least five years successful experience in a TP and database environment.

A sound knowledge and good experience of the techniques of data analysis is essential and previous experience of sales/marketing applications would be an advantage. Although experience of an IBM/IDMS environment would be particularly relevant, the major requirement is for the ability to communicate well at all levels including very senior management.

Candidates for either positions should have a good educational standard ideally to degree level or equivalent. Equally, they should be able to demonstrate commitment, enthusiasm and a strength of character to see a job through to a successful conclusion. In addition to the salaries, the successful candidates will enjoy a wide range of large Company benefits, including profit sharing and a non contributory pension scheme. Assistance with relocation will be provided where necessary, to this location just west of London.

In the first instance applicants should contact **John Pitt** on **01 935 0671** during office hours (24 hour answering service) or should write enclosing a full C.V. to the London address below. (7983)

هكذا من الأصل

Technical, Sales & Management Appointments

SCR
Specialist Computer Recruitment Ltd

SOUTH
James House, 46 James Street,
London W1M 5HS
01-935 0671/486 6461

MIDLANDS & INTERNATIONAL
35-37 Great Charles Street,
Queensway, Birmingham B3 3JY
021-236 3781

NORTH
International House, 84 Deansgate,
Manchester M3 3EE
061-833 0427

BELGIUM
Avenue Louise 327,
Boîte 4, 1050 Bruxelles
010 322-640 7161/71

HOLLAND
Willemsparkweg 92,
1071 H.M. Amsterdam
010 3120-769947

SALES EXECUTIVES

£30K on quota

IN BRISTOL, CRAWLEY, DUNSTABLE, LONDON & UXBRIDGE

time is [illegible] for you

If your company doesn't already have [illegible] generation natural language system

[illegible]

هكذا من الأصل

MANAGEMENT & EXECUTIVE SELECTION
Suite 201-208
Albany House,
324 Regent Street,
London W1R 6AA

Name
Address
Home Tel
Work Tel
Ext

HOWARD

UK and European Assignments

(3) System Programmers, IBM, MVS, Assembler	W. Germany	1yr
(2) Sen. Programmers, IBM, APL, Mainf, Micro	W. Germany	6m+
(2) Sen. Programmers. UNIVAC, DMS1100, TIP	Switzerland	1yr
(2) Analysts, UNIVAC, DMS1100	Switzerland	1yr
(2) Designers, IBM, IMS/DB/DC	W. Germany	6m+
(1) Sen. Programmer, IBM, IMS, PL/1	Switzerland	6m+
(6) Sen. Programmers, IBM, IMS, PL/I	W. Germany	6m+
(1) Project Leader, IBM, IMS, Insurance	W. Germany	1yr
(All assignments above require German speakers)		
(6) Prog/Analysts, IBM, MVS, PL/1	U.K.	3-6m
(3) Prog/Analysts, 8086, CHILL, PASCAL	U.K.	3-6m
(3) Prog/Analysts, IBM, IMS, PL/1, COPICS	U.K.	6m
(3) Tech/Programmers, VAX, FORTRAN, C. GRAPHICS	Scotland	3m+
(1) Programmer, UNIVAC, DMS1100, COBOL	U.K.	3m+
(1) Programmer, IBM, COBOL, CICS	U.K.	6m

For more information on UK and European contracts please telephone Clive Chettin on 01-952 8092 or write to him at:

Howard Computer Sciences Ltd
Russell House, 140 High Street
Edgware, Middlesex HA8 7BS

(8064)

FOR
CLASSIFIED
ADVERTISING USE
DIRECT LINES

RECRUITMENT CONSULTANCIES
(01) 661 8787

DIRECT ADVERTISERS
(01) 661 8080

ICL PROJECTS

Rates to £600 a week
LARGE number of Immediate Contracts
Herts & Berks

Programmers with any of the following: VME/TME/DRS 20/George III/IOMS/COBOL – RANGE/CIS SCL/CI

Analyst programmers and business analysts with strong ICL and business background.

Please write or telephone

Pentagram
1a KILN HOUSE YARD, ROYSTON, HERTS.
TEL: (0763) 47f81 (24 hours)

(7818)

We put more challenge into software

CONTRACT OR PERMANENT — MAKE US YOUR FIRST CHOICE

Our success as a software house is reflected in the range and quality of positions we offer for contract or permanent staff. Our future in the international systems and software world is impressive and your career enhancement with us will be impressive too, to project management and beyond. Here are some of the positions on offer with some of our clients — major commercial organisations.

DATAPOINT	Analyst/Programmers	Wiltshire
	Programmer	
MARK IV	Programmer	London
COBOL, PRIME	Programmer	London
ADF	Consultant	London
BANKING EXP:	Analyst	London
SWIFT		
TELECOMS EXP.	Software Engineers	London
PL/1, DL/1, CICS	Analyst/Programmer	London
MANTIS	Programmers	Sussex
QPAC exp.	Programmer/Analysis	Surrey
COMMUNICATIONS EXP.	Consultant	E. Anglia
– SNA, X25		
IBM 8100, COBOL	Programmers	Kent
PL/1, MVS	All levels	E. Anglia
TEXAS INSTRUMENTS	Systems Programmer	London
IBM S/38	Programmer	South
ICL VMEB; IBM MVS	Programmers	Sussex
	Programmer/Analysts	

- ★ Excellent contract rates/salaries ★ Full range of benefits
- ★ Opportunity to work on challenging contracts throughout UK, Europe, Middle East and possibly USA.

Please contact:
Tangent Computer Services Ltd.,
Fairfield House, Fairfield Road,
Brentwood, Essex CM14 4LR.
Tel: Brentwood (0277) 255755.
(24-hour answering service).

tangent
success in the Software world

YOUR NEXT CAREER MOVE?

CENTRAL LONDON £9,000-£13,000

ICL COBOL – NEW PROJECTS

If you can offer experience of systems and programming on ICL 1900 and/or 2900 range hardware ideally with VME, our client, a highly respected consultancy organisation, can offer you challenging new project work developing on-line database systems for leading household names. Opportunities exist to work on other hardware including IBM.
Ref G1

SURREY £8,000-£10,000 + BENEFITS

PL/1 PROGRAMMERS PROGRAMMER/ANALYSTS

Our client, a very successful Insurance Company, currently engaged upon a range of new financial based projects, has created a requirement for PL/1 Programmers and Programmer/Analysts with upward of one year's experience. These projects make use of on-line database software for which training will be provided if required. The excellent range of benefits offered includes a mortgage subsidy and good staff facilities.
Ref J2

CITY OF LONDON TO £12,000 + BANK BENEFITS

RPGIII – SYSTEM 38 – BANKING

A major international bank located in the City is seeking to recruit programmers for their System 38 Installation. Candidates should offer at least 18 months' programming experience with RPGIII training available for RPGII programmers. You should be capable of progression to a programmer analyst role and an excellent Bank Benefits package will be offered including a preferential mortgage.
Ref L1

CITY OF LONDON £8,000-£12,000

COBOL OR PL/1 PROGRAMMER/ANALYSTS PROGRAMMERS

A leading financial organisation in the City is seeking Programmers and Programmer Analysts to work in their large IBM MVS mainframe environment utilising IMS database and on-line software. You will need to offer at least two-three years' experience of COBOL/PL/1 preferably on IBM hardware with opportunities to develop new systems. The organisation offers attractive benefits and excellent career prospects.
Ref G2

SOUTH MIDDLESEX £8,000-£12,000

SYSTEM 34/36/38 ANALYST PROGRAMMERS AND PROGRAMMERS

Our client, a major supplier of application software to small systems users, is seeking ANALYST PROGRAMMERS and PROGRAMMERS for for their office in South Middlesex. Applicants should possess sound programming skills in RPGII and/or RPGIII and the positions offer work on both package implementation and bespoke systems. The company is expanding and is able to offer people an opportunity to join in this growth and success and enhance their career prospects.
Ref K1

CITY TO £16,000

ANALYSTS – FINANCIAL/ BANKING PROJECTS

A large financial institution based in the City is about to embark on a wide ranging development of systems for the Financial sector. (Senior) Systems Analysts are now sought to take project responsibility for systems which will require extensive user group liaison. Candidates must offer several years' systems experience preferably including IBM knowledge and will be capable of project leading.
Ref L2

HAMPSHIRE £10,000-£13,000 (+ BENEFITS)

COBOL ANALYST/PROGRAMMERS

Several exciting career opportunities exist within this rapidly expanding IBM 4341 MVS environment where a new project development schedule has recently been agreed. If you can offer at least two years' IBM COBOL then training in CICS DL1 and MVS will be provided together with company benefits including low cost finance, a mortgage subsidy and a very attractive relocation package.
Ref J1

NORTH MIDDLESEX £11,000-£13,000

IBM COBOL CICS ANALYST PROGRAMMERS AND PROGRAMMERS

A leading supplier of consumer home leisure equipment with branches nationwide is now seeking Analyst Programmers and Programmers with sound IBM COBOL based experience. Applicants should be able to demonstrate good commercial experience and will enjoy a variety of COBOL CICS based projects. An excellent benefits package is available.
Ref K2

CENTRAL LONDON £11,000-£13,000

ANALYST/PROGRAMMERS PROGRAMMERS COBOL CICS/DL1 – Training

A leading IBM user based at a very accessible Central London site is seeking to recruit programmers and analyst programmers for their IBM 4300 MVS installation. The company are currently developing a range of new financial systems using CICS and DL1 and can offer excellent career development opportunities. Excellent benefits include a subsidised mortgage and a non-contributory pension.
Ref R1

If you wish to apply for any of the above positions telephone or write now quoting the appropriate reference. DP Selection Services service clients in London and the surrounding counties. If you wish to discuss your career move requirements telephone one of our consultants for a confidential discussion.

dp SELECTION SERVICES
A member of the DP Support Services Group

7 Swallow Street, London W1R 7HD
"We look forward to hearing from you."

01·434 2042
(24 hour Ansaphone)

(7601)

IMMEDIATE FREELANCE OPPORTUNITIES

NORTH WEST, WEST, SOUTH, HOME COUNTIES

S·COM is a highly successful software house with a solid client base of major international companies and government establishments involved in leading edge Real-Time developments.

To satisfy the continued growth in our client requirements, we regularly supplement our own staff resources with experienced Real-Time professionals who work with us on an *associate* basis.

If you are a freelancer (or thinking of becoming one) and have the professionalism necessary to maintain the high standards that clients have come to expect from **S·COM** then register with us today. We have immediate vacancies for professionals with expertise in any of the following:

- ★ TELEPHONY, MESSAGE SWITCHING, SYSTEM-X, VIEWDATA
- ★ INTEL, ZILOG, TI AND MOTOROLA Microprocessors
- ★ VAX, PDP 11 and GEC hardware
- ★ PASCAL, CORAL, MASCOT

Call LAWRENCE MILLS today to register and get full details on our current vacancies.

S·COM *Computer Systems Engineers Limited*
Tower House, High Street, Aylesbury, Bucks. Tel. 0296 32023
Evenings after 7pm or weekends 0296 33059

(8043)

TAKE OFF IN '84! PROGRAMMERS £10K EXCITING PROSPECTS!

Join our clients, a major international computer service organisation, providing bureau, turnkey and micro services to exciting GROWTH market sectors.

Based on the SURREY/HANTS border, they operate a 4341 linked into an extensive communications network. They utilise:

- ★ VM, CMS, DOS/VSE, SHADOW II, ADABAS.
- ★ Programs written in: COBOL, ASSEMBLER and NATURAL.

APPLICANTS should have:

- ★ 2-4 years' COBOL and ASSEMBLER – preferably DOS environment
- ★ Dynamic commitment to career progression
- ★ Good educational background – preferably 2 'A' Levels.

Vacancies also exist for TRAINEES with HNC or equivalent computer orientated qualifications.

Please telephone STUART BLAKE on Farnborough 516141 to arrange confidential interview. Or send detailed C.V. quoting ref: SB 450 to:

TRIDENT COMPUTER SERVICES GROUP PLC
Trident House
38/44 Victoria Road
Farnborough, Hants GU14 7UD

(7974)

TRIDENT COMPUTER SERVICES GROUP PLC

TRIDENT HOUSE,
38/44 VICTORIA ROAD, FARNBOROUGH,
HANTS. GU14 7UD
Telex: 858 233 Tel. Farnborough (0252) 516141

Computer Professionals

Real-Time Software Engineers
London and Surrey Borders Up to £15k+

Consistently expanding software house requires more staff with 18 months' real time systems experience. Knowledge of CORAL or FORTRAN on GEC 4000 or DEC equipment used for defence or industrial applications is needed. Bonus points for MASCOT skills. Excellent career prospects. Ref 2302/A

Database Analysts — Up to £15k
London

Substantial experience of database systems (IMS IDMS INGRES) is needed with skills in data analysis and logical database design. Database dictionaries, database administration and physical database design are other areas of interest to our client. Either commercial or defence systems (preferably with graphics) would be worthwhile applications backgrounds. Overseas travel possibilities. Ref 2302/B

Analyst/Programmer — £7½k-£11k
London

A minimum of 12 months' on-line programming experience is required to join a team involved in the development and support of real-time software products for the UK and European Insurance markets. Personal attributes are of prime importance and the opportunity exists to move into a specialist technical role. Ref 2302/C

HP 3000 Analyst/Programmers
London £8k-£12½k

We have two clients currently seeking staff with good business and commercial experience gained in an HP 3000 environment. In both cases new development work is being undertaken and opportunities exist for people with all levels of experience. A minimum of 12 months' (post training) COBOL experience is essential and knowledge of QUICK, QUIZ and QUERY useful. Ref 2302/D

Banking — £12k to £18k package
London and travel

Two years (minimum) to five years (better) as an analyst/programmer in big minicomputer environment is the experience our client seeks. Tandem + TAL/COBOL or IBM + RPG is ideal, but other Banking systems experience will also be considered for the more senior positions. Candidates must have project leading potential. Ref 2302/E

Product Manager — £12k-£14k base
London

MicroNut or Marketing Man? Maybe a mixture of both. My client's new product follows a line of small WP devices and is targeted at the home and educational microcomputer market. They are looking for a competent, capable and effective communicator with micro programming and product or project management experience. Ref 2302/F

IBM Analyst/Programmer — £8k-£16k
London

Our major consultancy client has vacancies at levels from programmer to senior analyst for staff with good CICS/IMS skills. Knowledge of structured programming helpful. A software house background would be preferred but other high calibre candidates should also apply. Ref 2302/G

Sales	London & South East
Dealer Sales, P.C.s	£10k+10k++
Major Accounts, Peripherals	£12k+12k++
Sales Manager, Comms. products	£20k pkg
P.C. Software, Packages	to £30k
OEM Accounts, P.C.s, LANs, W.P.s	£18k+comms

Ref 2302/H

IBM-GSD · MAAPICS — £10k-£17k+
Greater London

Posts are available for well-qualified MAAPICS practitioners at levels varying from analyst/programmer to senior consultant. Some mobility and the personal qualities necessary to lead projects and to deal with clients are needed for the senior positions. Ref 2302/J

Software Engineers — To £14k + relocn.
London & Swindon

R & D department of a major British WP and PC (office automation) manufacturer has junior/senior vacancies for good graduates with a minimum of three-six years' relevant practical system design experience of communications, graphics, office automation, L.A.N.S. or voice recognition. Familiarity with structured programming using PLM-86 or C with Xenix/Unix or other operating systems is required. Ref 2302/K

Process Control — £9k-£16k
London, UK and Europe

Real-time experience involving high and low level languages is essential, but to qualify for the positions candidates must have worked on at least one process control project, either industrial, petro-chemical, nuclear power or similar. With projects throughout the UK and in Europe there is plenty of scope for interesting and varied career development. Ref 2302/L

Systems Designers — To £13k
Maidenhead/Stevenage

Expansion again creates positions for firmware programmers and designers of mini or micro systems in the commercial and industrial sectors. Two years' postgraduate experience of CP/M or UNIX type operating systems with both assembler and high level language skills is required, as is knowledge of DEC or micro processor hardware. Ref 2302/M

Real-Time Applications — Up to £17k
Surrey Border

This systems house is seeking computer professionals capable of responding to a variety of technical challenges in the areas of defence, communications and information systems. The essential requirements include a good degree and technical competence in high level languages, e.g. PASCAL, CORAL 66, RTL/2, 'C' or FORTRAN. Ref 2302/N

Two to 20 years Computing — £8k to £28k
England and Elsewhere

If your skills and requirements are not a match for the specific vacancies advertised here and you consider yourself to be "marketable material" call one of us for a short discussion. We know of a wide variety of vacancies in the computer industry. Ref 2302/P

☎ **Isobel Bruce, David Futcher or Gilbert van Someren 01-405 1006 or write quoting Ref. number, 16 Red Lion Square, London WC1R 4QS**

Recruitment consultants Licence No SE 5788

(7980)

PROGRAMMERS RPG II/III

18 MONTHS + EXPERIENCE REQUIRED FOR CITY/N. LONDON SITES.

SYSTEMS 34/36/38

KPG

01-948 5922

Ring David Mason Johns at KPG on 01-891 0906 (Eves and Weekends)

CROSSWORD

Solution to Prize Crossword No 49

1 G	O	2 T	O	3 W	A	4 R	■	5 S	I	6 S	T	7 I	N	8 E
E	■	H	■	E	■	I	■	C	■	O	■	T	■	D
9 N	A	R	K	S	■	10 F	L	O	O	D	G	A	T	E
T	■	U	■	T	■	L	■	T	■	A	■	L	■	N
11 R	E	S	U	R	G	E	N	C	E	■	12 G	I	S	T
Y	■	H	■	I	■	■	■	H	■	13 C	■	A	■	A
■	■	■	■	14 D	E	15 A	D	A	G	A	I	N	S	T
16 I	■	17 S	■	I	■	L	■	N	■	L	■	S	■	E
18 M	A	T	I	N	E	E	I	D	O	L	■	■	■	■
P	■	A	■	G	■	R	■	■	■	T	■	19 M	■	20 F
21 O	W	N	S	■	22 S	T	E	23 R	E	O	T	Y	P	E
R	■	D	■	24 F	■	N	■	U	■	A	■	R	■	A
25 T	I	P	S	I	N	E	S	S	■	26 R	I	T	E	S
E	■	A	■	N	■	S	■	E	■	M	■	L	■	T
27 R	O	T	T	E	R	S	■	28 S	Y	S	T	E	M	S

This month's first prize of £10 goes to Michael Keogh, a salesman with the Star Computer Group in London. Second prizes of £5 each are on their way to Anne M. Currie, technical consultant at the Hoskyns Group in London; and John A. Nicholson, computer supervisor at the University of Manchester Institute of Science and Technology.

Software Systems Design Engineers

c.£10-15,000

Hardware Past . . .
. . . Software Future

But, for the present, bridging that gap depends on how you plan your next career move – and that's where we come in. A highly successful Company in the area of advanced digital communication systems, we are looking for additional software engineers/team leaders to provide direct input at every stage of the design and development process, on a wide range of projects.

Your involvement will stretch from initial conception to final product release, which means an ability to grasp microprocessor-based hardware concepts is as important as your software skills. Speaking of which; you'll have real-time and systems software design experience – Assembler and high level languages applied to communication systems preferably. Of course the more senior positions call for greater in-depth experience and man-management ability.

Naturally, the rewards are outstanding, the environment forward thinking and the prospects for career progression exceptional.

To find out more, contact **Gavin Rendall on 01-578 0081** or alternatively send a brief C.V. to **Dowty Electronics Ltd. Bridport Road, Greenford, Middlesex.**

DOWTY

DOWTY ELECTRONICS LIMITED
Communications Division

Left in file

FOR
CLASSIFIED
ADVERTISING USE
DIRECT LINES
RECRUITMENT CONSULTANCIES
(01) 661 8787
DIRECT ADVERTISERS
(01) 661 8080

SMR
Sales & Marketing Recruiters Ltd
Leaders in High Technology Recruitment

SALES EXECUTIVES
COMPUTER AIDED ENGINEERING
HARDWARE & SOFTWARE SYSTEMS

It's nice to have the opportunity of satisfying the recruitment needs of a fast growing international organisation whose name is a by-word for innovation and product integrity, a reputation that is synonymous with all that is excellent in technological progress, a name that implies instant credibility. Such is our client, a company with manufacturing capabilities that extend from computer systems to micro-chips and more particularly, very special skills in the provision of integrated CAD/CAM systems (CAE if your prefer it!).

The last 3 months have been the most successful in the company's history and continuing growth has now created the need for additional salespeople to sell Computer Aided Engineering Systems to mechanical engineering and manufacturing organisations throughout

MIDLANDS & NORTH
SOUTHERN ENGLAND

Candidates are likely to be currently employed in selling CAD/CAM systems for a recognised major supplier or involved in the provision of engineering related computer services, preferably with an engineering qualification. Sales targets are relatively low for this sector of the market place and anticipated on target earnings will be

£32,000 + COMPANY CAR

Please contact Alasdair Scott (London), or Roger Dodd (Lichfield), quoting reference SSA/024.

This job is available to both men and women.

(7840)

LONDON & SOUTH
29 Oxford Street,
London W1. (01) 734 9776

MIDLANDS & NORTH
Cathedral House, Beacon Street,
Lichfield, Staffs. (05432) 56612

Answering Service after 6 pm and weekends
SALES TRAINING, MARKET RESEARCH, RECRUITMENT

CHASE SYSTEMS

SOFTWARE ENGINEER

Ambitious, self motivated software Engineer required by a rapidly expanding company developing a Unix single board computer. The work will include 8086 and 68000 assembler. A knowledge of Unix, CP/M 86 and 'C' would be an advantage.

The successful applicant will find this position highly rewarding both technically and financially.

Applications to:
CHASE SYSTEMS LTD., St. Leonards House, St. Leonards Road, Mortlake, London SW14 7LY. Tel: 01-878 7748.

(7849)

FOR
CLASSIFIED
ADVERTISING USE
DIRECT LINES
RECRUITMENT CONSULTANCIES
(01) 661 8787
DIRECT ADVERTISERS
(01) 661 8080

The IBM SYSTEM34/36/38 Recruitment Specialists

RPG II & RPG III

for

Programmers, Analyst Programmers

on

Banking, Insurance, Commercial, Manufacturing Applications

£7,000 — + Benefits to — £18,000

For all areas

London (City, West End, North, East, South, West) Middx.

Beds	Surrey	Somerset	Cheshire
Herts	Sussex	Wilts	Cambs
Hants	Essex	Norfolk	Wales
Berks	Kent	Devon	Devon
Bucks	Oxon	Gloucs	Lancs

Please call Richard Milsum on 01-354 1055 during office hours or on 01-958 2553 during evenings and weekends. All response will be strictly confidential. All vacancies are permanent subject to availability.

(7878)

MARCH 1 NOEL ROAD, LONDON N1 8HQ
COMPUTER 01-354 1055
RECRUITMENT LTD

SALES BIT

Quality of Management – 84

Never hide the truth about the opposition

PRODUCT knowledge has been emphasised in this column over the last few weeks, but that is only one of four key areas of skill in which the accomplished salesman needs to be proficient. This week I would like to talk about the importance of knowing your competitors and their products as well as your customers and their needs.

A salesman obviously cannot be expected to sell his product effectively until he knows how good it is. What is perhaps not so obvious is that what he needs to know, more particularly, is how good it is in relation to other alternatives. Yet how can he have this knowledge if he doesn't have detailed information on what his competitors are able to offer?

If he is to stand any chance of sales success he needs to know the advantages and feature benefits of his company's products relative to others that are also available in his own marketplace.

For some reason, best known to psychiatrists, some sales managers behave as if they believed the very opposite to this rather obvious statement. They do so by misleading their salespeople, and sometimes themselves, as to competitive products.

They turn a blind eye to the key benefits of other products and try to brainwash their salespeople into believing their product is superior and untouchable and that the competition consists of an array of idiots peddling worthless merchandise.

This kind of blind chauvinism is pointless and idiotic for it can only lead to the kind of disaster that is inevitable when salespeople are asked to work in the dark.

If you hide the truth about the competition from your salespeople they are bound to discover it eventually, and probably in the worst possible circumstances – like in front of a major prospect.

Everything will be going fine when he is suddenly asked about a special facility being promoted by the competition. Within seconds he is fumbling, his confidence declining, control of the negotiation slipping away, all because he doesn't know what the buyer is talking about. What the hell is a dongle anyway?

It is easy to make the mistake of thinking that knowledge of competitive products will undermine the salesman's confidence in his own company's offerings. Quite the contrary. The salesman can operate much more effectively if he knows what he's up against.

We all have a basic fear of the unknown. Horror movies use surprise and suspense to get the adrenalin flowing, and the eventual appearance of the actual monster usually comes as light relief. If the salesman knows what he's up against he can be prepared with compensating alternatives and sensible arguments about the relative cost/benefit of the features involved.

Maybe they are not even relevant to the client's need. Maybe his product provides the same facility in a different way. If he is handicapped with ignorance he will spend all his time worrying about the opposition. How good is their product? Is it better than ours? Can we compete? Does the prospect know something I don't?

This is a sterile situation that can only lead to under-equipped salespeople and ultimate sales failure.

For me, the most challenging and satisfying occupation for the salesman is creative selling. This is a process where either the problem to be solved is identified by the salesman rather than the buyer, or where the application of the solution – the product – is made in an imaginative and unusual manner; or even both. This effectively means that the buyer ends up purchasing something that, prior to the salesman's visit, he had no intention of buying. No high pressure, strong-arm tactics or sales trickery, but rather logical evaluation of the buyer's situation and needs relative to the kind of solutions he has available.

It is the kind of selling ability that enables some people to find business where others have difficulty in surviving. It is this level of skill that keeps some salespeople consistently at the top of the league-table. It is this depth of knowledge that brings sales success to some people who may have little personality, unexceptional administrative capability and indifferent selling skills.

What it all boils down to is developing a total understanding about the customer and his business: the products, the marketplace, the manufacturing process, the business problems and opportunities, the people and their interests, the politics and so on.

One of the biggest factors in sales success is the achievement of professional credibility in the eyes of the potential buyer. Are you the kind of person he wants to deal with and can you really be trusted to solve his problems?

The assurance the buyer really needs usually comes from a belief that the salesman not only knows about the product he is selling, but also its applicability in the buyer's context relative to the prevailing situation and the idiosyncrasies of their particular business.

Learning is one thing, but remembering is something else. There is no point in learning all about the customer operation, then rapidly forgetting all about it. That's where comprehensive client records come into their own.

In my career as a sales manager I have received a heap of flak about a wide range of sales disciplines and responsibilities, but I suspect some 90% of it has been about the maintenance of effective client records. I have never understood why so many salespeople (and many of their managers!) when confronted by the inescapable logic of maintaining meaningful and continuing client records, proceed to mess about with a few grotty cards or manilla envelopes, or more typically, ignore the process altogether.

I have frequent conversations with people on this topic who agree wholeheartedly with the benefits of maintaining comprehensive client records. They will willingly accept the advantages in terms of customer perception, continuity in times of holidays, sickness or territory change and the obvious contribution to sales success. But when asked to produce evidence of their commitment they can offer no more than willingness to participate in a brain-scan.

Effective client records are more than names, addresses and telephone numbers. They need to contain information that produces a picture of the client.

Alan Williams

PUZZLE ANSWER

THE only possible answer is:

```
  775
   33

 2325
 2325

25575
```